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A MANAGEMENT PHILOSOPHY AND AN INTEGRATED FACILITIES MANAGEMENT SYSTEM

JOHN M. DANIELS

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NAVY GRADUATE COMPTROLLERSHIP PROGRAM

A MANAGEMENT PHILOSOPHY
AND
AN INTEGRATED FACILITIES MANAGEMENT SYSTEM

By

John M. Daniels

Lieutenant Commander, CEC, USN

For

Doctor A. Rex Johnson

May, 1958

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DANIELS, J.

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PREFACE

In the past two decades profund changes have taken place both in the conduct of Government business and on the industrial scene. A multitude of new techniques and programs have been developed. The danger is that these procedures will merely be super-imposed on old concepts and assumptions of the job of management. The Navy's Bureau of Yards and Docks occupies a unique position in the facilities management area due to the very nature of its assigned mission.

The author has long believed that a need exists for reexamining the management functions and responsibilities of the Bureau, to clarify the specific objectives and operating philosophy, and to reappraise the basis of the management authority. The fundamental approach that was taken in this study was that certain basic management concepts that have withstood the fire of industrial strife are ideally suited for management in the Bureau. The paper is therefore divided into two main parts. The first is the philosophy for management. The second is an integrated Facilities Management Program which attempts to put to practical use the developed philosophy.

A weekly three hour seminar during the past year provided a unique opportunity to intimately question over forty-five of the top management representatives of some of the leading corporations in the United States. This was possible through the seminar developed by Dr. A. Rex Johnson, Director of the Navy Graduate Comptrollership Program, at George Washington University. In

addition close liaison was established by the author through periodic visits to the Bureau of Yards and Docks. I am particularly indebted to Captains James Davis, Norman Martinson, Paul Seufer, Richard Pratt and Messrs. Jack Saum, William Halstead, and numerous others who graciously assisted by the availability of time, records and advice.

The portion of this paper that was concerned with the development of revised expenditure accounts, (chapter VI) resulted from a membership by the author on a combined NAVCOMPT/BuDocks study and development panel consisting of the following:

Mr. Max Coe	Code A-712 BuDocks
Mr. James N. Harris	Code M-211
Mr. Richard Kear	Code A-621
LCDR. John M. Daniels	Navy Comptrollership Program, GWU.
Mr. Oscar Lightner	NAVCO Management
Mr. C. A. Besser, Jr.	Code A-631

During the month of April temporary additional duty orders permitted a two day visit to Norfolk, Virginia and attendance at the East Coast meeting of the Maintenance Division Directors of the District Public Works Officers. This meeting resulted in an updating of the management problems in that field.

In a natural exhuberance to outline an integrated management program it may be that I have neglected to clearly indicate that some problems have been previously recognized. This is true in regard to the recommended revisions to the Annual Inspection of Public Works and Public Utilities report contained in chapter VII. Captain Paul Seufer and Mr. Jack Saum of the Maintenance Division, BuDocks have given extensive study to this problem and are currently re-

vising this report. The author has also just been informed that subsequent to the development of chapter VIII on the organizational problems that a Shore Establishment Division has been established. This division will undoubtedly cover many of the management problems noted.

Even in the programs phases mentioned and in fact throughout the development of the paper there exists, however, certain fundamental viewpoints and opinions that are peculiar to and original with the author. If any of these are found too far from the practical basis of reality I can only refer to the works of Bacon:

> A mixture of a lie doth add pleasure. Doth any man doubt, that if there were taken out of minds vain opinion, flattering hopes, false valuations, imaginations as one would, and the like, but it would leave the minds of men poor shrunken things, full of melancholy and indisposition, and unpleasing to ourselves.[1]

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[1] Bacon's Essays with Annotations by Franklin Fiske Heard (Boston: Lee and Shepard, 1871) page 2.

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PART I

A MANAGEMENT PHILOSOPHY

CHAPTER I

THE CHALLENGE

Everyone in Government service generally concurs in the desire for achieving efficiency through better management. Efficiency usually means a fresh approach and the adoption of new programs, methods and procedures. Unfortunately there is some great measure of psychological assurance attached to the "going concern". This is especially true at the Congressional level. Unless they have some special reason for a change members of the subcommittees are inclined to accept estimates that do not differ from the appropriations they approved the year before.

There is a major lack of regard for an assessment of the results accomplished. Are we missing the boat by focusing all our attention on the process of budget preparation, when in fact the real objective is increased economy and efficiency in government operations? The operation of the U. S. Government appears to begin and end with the Federal budget. There is widespread publicity connected with _isolated_ areas of waste.[1] As an instrument of management improvement, however, the budget procedure just does not fulfil its potential. The principle of exception as practiced at Congressional level is based on the theory that as long as agencies continue at their former rate "all is right with the world". The factors of economy involved in performance, elimination of du-

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[1] Paul Douglas, _Economy in the National Government_, (Chicago: University of Chicago Press, 1952), chapters VII and VIII.

plication and the actual integration of management improvement programs form an incidental role.

During the years there have been many studies and recommendations concerning elimination of the inadequacies of the legislative and budgetary processes. There is a definite reluctance, however, on the part of Congress to approach the problem from the basis of an administrative management solution. There is always the fear that such procedures would lead to a reduction in congressional influence.

> In addition many Congressmen doubt that the executives of the armed services possess the imagination to devise and the determination to enforce practices that would increase the effectiveness of the American military machine and reduce its expense to taxpayers.[2]

This view was enforced by the report of the Hoover Commission's Task Force on National Security Organization by the statement that it "failed to find in the military establishment a sense of cost consciousness or a general realization of the vital importance to our national security of utmost conservation of our resources". It concluded that "the military services are far too prodigal with Government funds".[3] This group together with some of the leading authors on public administration have also recognized that increased efficiency depends on improved management in the broad sense; *and the failure to increase efficiency may be attributable largely to the fact that management improvement has not been successfully amalgamated with the budgetary process*.[4] The late Senator Taft

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[2] Elias Huzak, *The Purse and the Sword*, (N. Y.: Cornell University Press, 1950) pp. 381, 382.

[3] The Committee on the National Security Organization of the Commission of the Executive Branch of the Government, *National Security Organization* (Wash. 1949) pp. 5, 71.

[4] Arthur Smithies, *The Budgetary Process in the United States*, (New York: McGraw-Hill Book Company, Inc., 1951), p. 115.

stated that:

> No one can go into a business enterprise and tell the management they have got to save here or there. He cannot know enough about it to know how they should save the money. In government no appropriations committee can do a complete job of anything. The appropriations Committee can reduce funds to what it considers a point of safety, but it cannot be sure about going further. It might be destroying a departments effective work. Only the department itself can make the additional savings necessary over what Congress has done.[5]

This then is the challenge. It is a two sided gauntlet. On the one hand is the distrust of the ability and desire of the military establishment to increase management effectiveness. On the other is the realization that efficiency is not the result of legislation but of internal management.

THE ROLE OF THE BUREAU OF YARDS AND DOCKS

What is the role of the Bureau of Yards and Docks in contributing to management efficiency in the Navy? This Bureau is responsible for providing specialized or professional guidance and direction for:

> a) The construction, alteration, repair and upkeep of public works and public utilities, and the operating standards and procedures pertaining thereto.
>
> b) The repair and upkeep of, and operating standards and procedures for, weight-handling equipment, except Marine Corps equipment and specialized equipment assigned for technical control to another bureau or office.

The statement of Admiral Arleigh Burke, Chief of Naval Operations, before the Appropriations Subcommittee of the House of Representatives, early this year, serves to further emphasize the importance of the BuDocks role.

> . . . The various stations and activities which make up the Shore Establishment are constructed, maintained and modernized to provide sup-

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[5] 95 Congressional Record, daily ed., p. 12635 Aug. 29, 1949.

> port for the fleet in the most efficient and effective manner possible. Adequate and timely maintenance of the plant property and equipment is essential not only for efficiency but to protect the Navy's investment. During the past few years the limitation of funds for maintenance and the rising cost of things has forced the deferral of considerable maintenance work. This results in an increasing backlog of maintenance. The replacement value of the shore establishment is estimated at $17 billion, a large part of which is composed of world war II structures designed for a life expectancy of 5 years. With the value of Navy property increasing and the purchasing power of Navy appropriations decreasing, the Navy is faced with ever increasing problems.
>
> Vigorous efforts are being made to make the most effective use of maintenance funds in the shore establishment. Shore activities are being reduced where possible and the effectiveness of maintenance forces is being improved through controlled maintenance programs. However, these actions alone will not solve the problem. The provision of adequate maintenance funds is still a prime requisite for proper maintenance of the investment in the Shore Establishment.[6] . . .

The statistics contained in Admiral Burke's statement are emphasized by the graphs shown on pages 6 and 7. There is relatively less and less money available to do more and more work. The illustration on page 8 indicates the magnitude of the maintenance and operations expenditures in relation to the amount spent for new construction. It is in the day to day management of the Shore Establishment that the Navy can meet the challenge head on.

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[6] U. S. Congress, House of Representatives, Subcommittee on Appropriations, Hearings, DOD Appropriations for 1959, Statement on Maintenance and Operations Problems, 85 Congress, 2nd Session, Feb. 10, 1958, p. 505.

Fund Allocation 1957

$600,000,000

MAINTENANCE & OPERATION

$400,000,000

NEW CONSTRUCTION

CHAPTER II

INGREDIENTS OF A DYNAMIC MANAGEMENT PHILOSOPHY

In order to achieve better management it is necessary to study and obtain a knowledge of the principles that cause, control, and explain facts and events in the administrative process. This in effect is the definition of a philosophy. Our goal is the fullest and most efficient utilization of available manpower and money. What is the cause for our waste of these precious commodities? Herbert Hoover stated:

> Over 50% of the responsibility for these wastes can be placed at the doors of management and less than 25% at the door of labor; while the amount charged to outside contacts is least of all. The assays of waste show first, the need of definite and quantitative industrial information on a multitude of points.[1]

Mr. C. Knoeppel, one of the members of the Committee on Elimination of Waste in industry of the Federated American Engineering Societies stated:

> While wonderful progress has been made in the field of industrial or management engineering, the fact remains that due to a lack of proper terminology, an absence of definite units of measurement, and a lack of uniform means for examination and evaluation, it has been necessary too many times to fall back on generalizations, opinions based on experience or reputation, indefinite conclusions and approximations. If progress to date is not all it should be, the lack can be charged to the failure to examine properly and evaluate definitely. For this reason it is my conviction that a much more rapid and efficient development of the art of management will begin from the moment a perfected mechanism for analysis and diagnosis is placed in the hands of our engineers. A way should be found whereby one industry can be compared with another. This could be brought about by at-

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[1] Herbert Hoover, Waste in Industry, (New York: McGraw-Hill Book Company, Inc., 1921) pp. 68-71.

tempting to reduce industrial activities to common elements.[2]

It has been said that the most rewarding "new" ideas are simply the consideration of old schemes from a new point of view. The quotations of Hoover[3] and Knoeppel could have been taken from a modern treatise on industrial engineering. Their statements are not new. They were made over thirty-six years ago. It is not surprising that the military establishment has been slow to achieve a formal recognition of the role of industrial engineering techniques and the scientific approach to management. It was only natural that the problems of industrial production should be the first target of an approach designed to achieve increases in output and efficiency. The factors were more easily unitized and defined. The profit goal existed as a clear cut index of achievement. The evolution of the defense effort as a major portion of the national budget has served as a catalyst for management improvement. It is no longer possible to shrug off the overpowering economic considerations on the basis that the operation of the military establishment is an "art" not subject to mundane considerations. The author proposes a dynamic approach to management in the Bureau of Yards and Docks.

a) Search out problem areas.
   (1) If a new area provide for a formal initiation of exploration of problem.
   (2) Remember greatest inefficiencies can be found in "going concerns".

b) Be conceptual in approach by recognizing and developing interrelationship between participating factors (see page 16 for conceptual skill in management).

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[2] C. E. Knoeppel, "Measure of Waste in Industry", Bulletin of The Taylor Society, Vo. VII, No.2 (April 1922) p. 69.

[3] Herbert Hoover, loc. cit.

c) Carefully measure and precisely identify factors involved.

d) Express desired goals or result in a formal relationship with:
    (1) Problem of consistent program application.
    (2) Organization units at Bureau level.
    (3) Organization units at DPWO level.
    (4) Other management bureaus.
    (5) Activities.

e) Provide for testing by utilizing activities to provide better procedures, processes, decisions, etc.

It may be true that all of the management problems of the Bureau of Yards and Docks are not solvable by the dynamic approach. On the other hand the approach is not as restricted as one would imagine. The present tendency is to limit a management method of this type to one or two isolated programs in the Bureau. This serves to set it apart as an approach limited to a particular problem. One of the most forward steps that the Bureau of Yards and Docks could take towards management improvement would be to:

a) Inculcate in all hands the belief that the dynamic management approach is a general concept anyone can adopt.

b) Recognize that the true strength of any program takes place at the activity and DPWO level. Organizational units assisted by the DPWO must be able to repeat and test for themselves a logical approach to problems.

c) Establish an adequate definition of objective measurements and program formulation.

Many individuals will state that this approach is no different in practice than methods that they have been using for years. This is true. The difference lies in, (1) the extent to which problems are rigorously defined, (2) the way the measurement of the parts are carried on, and especially in (3) the way the relationship between the parts are expressed, and (4) the way they are formally recombined and repeatedly tested. In the Bureau of Yards and Docks operation a most vital part of the process would include communication of the results back

to the decision makers so as to provide for action on a continuing basis.

There are many other factors which would encourage BuDocks to use this approach. Among these are:

a) Growth of the Naval Shore Establishment in terms of facilities, number of employees, etc.

b) Diversification of types of facilities.

c) Growth in numbers and technical responsibilities of officers of the Civil Engineer Corps.

d) Technological developments in industrial engineering, nuclear physics, electronics, etc., including automation.

e) Changes in the political and social environment. (This is primarily concerned with the changing role that the public expects the military to assume in relation to economic and international considerations).

f) Increase in the size of investment required in new plant and equipment.

g) Gradual acceptance of industrial engineering techniques in the field of public works maintenance and operations.

It is not enough for BuDocks to solve problems on an emergency basis. We are fast becoming an atomic Navy and as a result there is an urgent need for methods whereby top CEC management can forecast the need. We must not only be able to recommend the best course of action, but have a program operationally capable of helping carry it out. New methods are required for:

1. Redefining the facilities management role of the Bureau of Yards and Docks in relation to the Navy organization including the Marine Corps.

2. Establishing an organizational capability for analysis.

3. Providing an adequate integrated program coverage of all related key public works management factors.

4. Reporting results in a manner that will permit other management bureaus to minimize risks while taking full advantage of the opportunities offered by changing conditions.

Growth of the Navy

1938·1957

119,000 676,000
Naval Personnel

1938·1957

69,000 389,000
Total Civilian
Employees

1938·1957

12,500 (Est.) 70,000
Civilian Employees
in Public Works

1938·1957

$779,000,000 $10,978,000,000
Plant Account of
Shore Establishment

5. Testing the operation in order to determine whether it is proceeding according to program by providing data with which to test the program itself.

CHAPTER III

THE CONCEPTUAL INGREDIENT OF MANAGEMENT

Katz in "Skills of an Effective Administrator"[1] developed a three skill approach to administration. These are: (1) the technical skill, (2) the human skill, (3) the conceptual skill. Any management improvement program prosecuted by the Bureau of Yards and Docks is primarily a direction of the activities of other persons. It is an undertaking of responsibility for achieving certain objectives through the efforts of individuals. As engineers the technical skill, involving specialized knowledge and analystical ability within a speciality, is highly developed. Our engineering skills and techniques are accepted as a matter of course.

As staff corps officers, the Civil Engineers perhaps could have a greater appreciation for the second or human skill. This skill is the executive ability to work effectively as a group member. It builds cooperative effort within the team. The BuDocks organization should be ever sensitive to skilful communication and the creation of an atmosphere of approval and security. Subordinates should feel free to express themselves without fear of censure or ridicule. There should exist true appreciation of the human skill. Members, including juniors, must be encouraged to participate in the planning and carrying out of those things which directly affect them. Human skill cannot be

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[1] Robert L. Katz "Skills of an Effective Administrator", Harvard Business Review, Jan.-Feb. 1955, p. 34.

a "some-time thing". Just as it must become an integral part of a person, it must become an integral part of the policies of an organization.

The final and most important skill involved is the ability to see the enterprise as a whole. This is the conceptual skill. It includes recognizing how the various functions of the organization depend on one another. Changes in any one part usually affect all the others. In the Civil Engineer Corps it extends to visualizing the relationship of the Bureau as a unit, the sum of its individual programs, to:

1. The Navy, as a part of the defense effort.
2. Industry and the community.
3. The political, social and economic forces of the Nation as a whole.

Recognizing these relationships and perceiving the significant elements in any Bureau sponsored program is the most difficult task presented to our CEC executives. Unfortunately it also represents the area in which there exists perhaps the greatest deficiency. The development of management improvement programs should be directed in such a way so as to advance the overall welfare of the total organization. The attitudes of our senior officers (which are a reflection of conceptual skill) color the whole character of the organizational response. The "activity personality" which distinguishes one bureaus way of doing business from anothers is thus determined. The Bureau of Yards and Docks' overall success is dependent on the CEC executives conceptual skill in establishing and carrying out policy decisions. This skill, is the unifying, coordinating ingredient of the administrative process. It is of undeniable overall importance.

USE OF THE DYNAMIC AND CONCEPTUAL METHODS IN MANAGEMENT OF BUDOCKS

A close observer of the major program developments in recent years in the Bureau of Yards and Docks can detect a definite trend toward the employment of industrial management techniques. Senior officers whose experience covers many years in the Corps have reason to be skeptical. Certainly there have been some premature statements by over enthusiastic devotees. This is an understandable by product of any new program. Great promises have been given without achieving all that was promised. In fact one of the critical shortcomings results from the inability in the military establishment to determine what *exactly* has been achieved. In the past decade we have traveled from the time clock, to the punched card, to the electronic data processing machine as the final solution to management problems. In the Bureau of Yards and Docks today the basic concept appears to be management planning and control at the Bureau level with decentralized management at the District Public Works officer level. We should be realistic enough to know that none of these can automatically eliminate the presence of managerial problems.

It is important to note that the author is proposing no new "management method" different from any which has been employed by some responsible officer in the past. The difference lies in the fact that the ability now exists to perform in an organized and systematic fashion some of the management planning and control functions which up to now have been carried on piecemeal. Civil Engineer Corps officers in positions of management responsibility must appreciate the fact that they have completely outstripped the narrow confines of "technical consultants". They are also responsible for operating a portion of big business. Just as new tools have become available for the physical job of

maintenance and construction, so now there are new tools for business analysis. It is to the advantage of the CEC officer that the new tools are primarily mathematical and statistical in nature. A look at the broad problem areas involved is of interest:

1. Replacement of old equipment.
2. New capital investment.
3. Transportation scheduling.
4. Location of facilities.
5. Inventory control.
6. Maintenance and operation of facilities including utilities systems.
7. Budgetary and related financial problems.

The average CEC officer may have every reason to object that he is already being stretched too far to the point that he will lose all value as a staff officer with the inevitable result of a "jack of all trade but master of none". Unfortunately most objections to management programs have been unrealistic. They have not been constructive in nature. The usual approach has been:

> "I do not like Thee Doctor Fell,
> The reason why I cannot tell,
> But this indeed I know full well,
> I do not like thee Doctor Fell".[2]

As engineers we would not think of starting an excavation job by digging with our hands. It is similarly necessary to employ the best management tools available for accomplishing the administrative tasks. Responsible seniors are entreated to achieve an understanding of the purpose that these tools can serve. New programs and methods, many of them adopted from other sciences and disci-

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[2] Nursery rhyme, author unknown.

plines are continually being investigated. Since methods are changing so fast, study of the field must be continuous, and related to BuDocks management requirements. It is for this reason that only a dynamic philosophy for management will suffice. The importance of a conceptual skill for the CEC executive was previously emphasized. A proper evaluation of the new management tools depends upon ability in this conceptual area. In summary it means:

a) The ability to see the Navy and the Bureau as a whole.

b) To know whether objectives are mutually compatable and valid.

c) To recognize how various functions of the organization depend upon one another.

d) To determine which assumptions must be made in order to allocate resources in an optional manner.

e) To recognize various alternative courses of action and their potential results.

SIGNIFICANCE OF PLANNING AND CONTROL

Experience at Navy activities, as in most large organizations both Governmental and commercial, indicates that there is a constant tendency to expand the function and personnel of any department in response to the many demands placed upon it. Parkinsons law of the rising pyramid[3] states that "work expands so as to fill the time available for its completion". General recognition of this fact is shown in the proverbial phrase "it is the busiest man who has time to spare". Parkinson develops the point that the number of officials and the quantity of work are not related to each other at all! The amusing concept is that the total of those employed would be much the same

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[3] C. Northcote Parkinson, Parkinson Law, and other Studies in Administration, (Boston: Houghton-Mifflin Company, 1957) pp.2-4.

whether the volume of the work were to increase, diminish or even disappear. This often has some horrifying validity under the concentrated scrutiny of improvement programs. Parkinsons[4] axiomatic statements that:

1. An official wants to multiply his subordinates not rivals.

2. Officials make work for each other.

may be a spectre that will serve to haunt us for years to come.

The difficulty is that the lack of management control at any one time is seldom of such proportion as to excite question. All the people may be obviously busy. It is therefore often assumed that the department is functioning efficiently. In many cases legitimate increases in the volume of business hide the fact that activities of questionable justification have been undertaken by a department. There is also a tendency for forms, reports, functions, and methods to be continued after they have outlived their usefulness. It can be stated that management planning and control will exist in the Bureau of Yards and Docks when three things happen:

a) A real need exists for a new way of managing. (The author contends this item is a "fait accompli").

b) Senior officers of the Corps recognize this need. (There is still room for development in this area).

c) CEC top management in the Bureau does something about it. (There is indication that this will be done).

There is no disputing the fact that the business world has a more or less realistic index of operations in the profit goal. It has been frequently pointed out by authors that this motive or objective of corporate profits is lacking in Government operations. It is not true however that the factors in industry

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[4] Ibid.

which serve to sacrifice profits for volume, false efficiency, prestige, or some other pet policy cannot be considered in the Government on the basis of a so called "reverse target" operation. The factors reported by business[5] as opposing to the single minded devotion of top management to profit may be reclassified for the Bureau as:

a) Empire building.
   (1) Organization unit or activity must be "biggest".
      (a) Manages to blanket the Navy with an awesome array of overhead personnel.

b) Ivory tower perfectionism.
   (1) Eyes fixed on the goal of efficiency based on rigid synthetically derived standards which have no realistic application in the activity involved.

c) Maginot line building.
   (1) Passes up the advantages of management improvement programs. Immune to new ideas for fear of taking risks. Insisting for example on an over complemented staff, excessive contingencies, etc.

In the absence of a profit goal in the government there is no reason why a management cannot strive to eliminate the aspects of empire building, ivory tower perfectionism and maginot line building. By so doing "profit" will be achieved.

The entire concept of management improvement is based upon the determination of cost and labor data in order to solve specific managerial problems. Proper attention to this method of accumulating data brings into proper context the significance of planning and control. Too often in the CEC Corps we are inclined to consider planning as a narrow process associated specifically with design and construction. Actually from the management standpoint planning is much broader in scope including:

a) Formulation of policies in order to establish the objectives of

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[5] Perrin Stryker, "P & C for Profit", Fortune Magazine, (April 1952),

the Bureau.

b) Design of organizational units in order to establish relationships and to organize activities.

c) Selection of resources so as to provide necessary staff, facilities and equipment.

d) Development of techniques and procedures so as to provide for direction of operations.

The proper application of control in BuDocks affairs means the conformation of events and plans. It provides for:

1. Individual responsibilities.
2. Classification of data.
3. Accumulation of performance data.
4. Measurement of data.
5. Reporting results.

In industry the basic criterion of planning and control is provided by certain indices such as the profit sales ratio, e.e. as sales go up profit should rise proportionately. Certainly it is not too far fetched to believe that even with the elimination of the profit motive, certain reliable indices relating to the field of public works and public utilities can be established. T. E. Bradshaw[6] defined planning and control as:

a) Setting a profit goal.

b) Setting departmental goals which, taken together, will achieve the profit goal.

c) Measuring progress against these standards.

d) Making continual adjustments to keep the whole organization moving in balance toward the goal.

It may be that many of the members of top CEC management are convinced that all

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[6] T. F. Bradshaw, "The Place of the Controller in Management Planning and Control", The Controller Magazine, (Oct. 1952),

the tools necessary to achieve planning and control are used. In the humble opinion of the author however, the two basic steps of planning and control are ignored:

1. Gearing the operations to a predetermined objective consistent with maximum service to the Navy.

2. Seeing that the various control tools are all coordinated to achieve that objective.

CHAPTER IV

CONCEPTUAL GOALS FOR THE CEC

It has been indicated that the full potential of the Bureau of Yards and Docks can be achieved only when the individual programs are coordinated into a common effort. Actually each program contributes something different, but it is easy to encounter misdirection. The plans sometimes do not quite meet the construction requirements. The construction records duplicate but cannot integrate with the facilities inventory. The controlled maintenance program fails to accumulate operating experience against the individual facilities inventory and is not resolved as a managerial consideration in the budgeting process.

Bureau performance therefore requires that each program be directed toward the objectives of the entire Bureau. In particular each executive's (Senior Officer's) job must be focused on the success as a whole. The performance that is expected of the Division Director must be derived from the performance goals of the Navy. His results must be measured by the contribution they make to the success of the Bureau. The responsible officer as a member of top management must know and understand what the Bureau of Yards and Docks goals demand of him in terms of performance. His superior must know what contribution to demand. Judgement should be made accordingly. The fitness report of officers should give careful attention to the extent of the management contribution. If these policies are not followed, officers in their managerial

capacity are misdirected. Their efforts are wasted. Instead of team work, there is friction, frustration and conflict. If it is considered that this is purely a technical concept look at the present problem of interservice rivalry in the Department of Defense. This is the same lack of conceptual skill, but at a different echelon. Management by objectives in the Bureau of Yards and Docks requires major effort and special techniques. In any enterprise managers are not automatically directed toward a common goal. On the contrary, BuDocks, by its very nature, contains powerful factors of misdirection:

1. The heavy accent on the technical, specialized factors of engineering.

2. The relative lack of management training of our technically oriented personnel.

3. The type of organization resulting in the insulation of various Assistant Chiefs, Division Directors, Departments, etc. from lower echelons.

This is not to give the impression that we should lose sight of the functional aspects of the CEC mission. Certainly the motives of each Bureau Division are legitimate. The functions are critical and necessary. They must be tied together in emphasis, application and administration. This is especially true in the administration of Civil Engineering Navy activities. In the context mentioned it is necessary to guard against the lack of stability, equilibrium, and directed concentration of forces. If the condition existed in a building foundation footing it would fail. Why expect more from an organization?

Of course there is the other side of the picture. There is also the danger that a "cult of management" men separate themselves from the realities of the Bureau. This, in effect, could become nothing more than an "off-balancing" mechanism. The answer lies in the necessity for placing our management

minded officers in positions of responsibility in all areas of the Bureau. It is not just a comptroller, or method and analysis responsibility. Management must manage.

Growth of the CEC in the sense that we shall use the term means the increase in the furnishing of technical know how and service with a commensurate increase in Navy operating efficiency in the areas of construction, maintenance and operation of shore facilities. Growth of this kind is the fulfilment of the responsibility and mission the Bureau of Yards and Docks as a Staff Corps. It is to the betterment of the Navy and the country. It requires that we:

a) Focus attention on programs, regular or specialized, to permit actual and realistic appraisal.

b) Make the plans and policies of the Bureau have meaning in that they keep the goals in sight and permit the employment of modern techniques aimed at the predetermined CEC growth pattern.

The attainment of the Corps potential growth as a service organization depends upon the complete understanding of the basic policies and objectives set for the Bureau by the Chief of Civil Engineers. What is the Corps trying to do? Where does it want to go, and how fast?

1. We want to become the finest management and engineering group of its kind in the world.

2. We must continually be aware of our mission primarily as a staff and service organization.

3. We must render our efficient services utilizing the most modern management and engineering techniques.

4. We must be continually research minded in our alloted fields.

5. We have need for and place the maximum value on management development as well as technical skills. The related development and improvement of our manpower is our continued aim.

6. There is no place in our organization for mediocracy and we are dedicated to the principle that the life blood of our corps rests in

the quality of our junior officers.

7. In the operation of our own CEN activities we must lead the way and set an example in the matter of managerial efficiency.

8. Our senior CEC officers must remain ever receptive to the benefits found in modern industrial engineering methods.

When these things are understood and accepted plans can be made and instruments of control designed.

J. E. Jonsson, President of Texas Instruments, Inc. defined seven essential steps[1] in a controlled program for growth.

a) Establish specific and detailed objectives.
    (1) What are our problems?
    (2) State them clearly.

b) Plan to attain the objectives.
    (1) Careful examination of possible and usable approaches.

c) Carry out the plan and record our performance.
    (1) "Separate the men from the boys".

d) Compare performance against plan.
    (1) Complete objectivity.
    (2) Evaluate our successes and failures.
    (3) Understand causes.

e) Take early corrective action or change plans when necessary.

f) Forecast periodically how closely the objectives will be attained in months or quarters ahead.
    (1) "The forward look".

g) Summarize at completion of period to improve future planning and performance.

These essentials apply to management in the Bureau of Yards and Docks. They are essentials for growth where growth is again defined as the increasing ability to provide service in the facilities management sector of the entire Naval establishment.

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[1] J. E. Jonsson, "Controls for Growth", American Management Association General Management Series No. 176.

PERFORMANCE AND THE DYNAMIC APPROACH

Self analysis is a valuable characteristic for any management enterprise. Since improvement is the desired end of our management program it would be unfortunate if misdirection may actually be decreasing rather than increasing organizational efficiency. Parkinson[2] has aptly, if amusingly, demonstrated that the personnel complement may be large, everyone busy, with effort and activity at a peak, but the results are not actually required. The organization may be "spinning its wheels". The important point is not what is being programmed but what is being accomplished. For instance, the Civil Engineer Corps gives graduate training in management to several officers each year. The success of this training is not demonstrated by the satisfactory completion of the required courses by these men. Neither is it indicated by a toll of the graduates concerning their opinion whether or not the course was worth while. The only true index would be performance. This is based on the degree to which the management principles and techniques are applied when the officers get back on the job.

Let us apply the dynamic approach to management. Traditionally accountability has been the concept of Government service. The trouble is that the emphasis has been on accountability based on the inventory of assets. We tend to be more concerned that items may be lost, strayed or stolen than with the fundamental question of: "How well do we employ the assets that we have?" Accountability yes, but accountability should be based on performance. It is here that the really great losses can, and do occur.

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[2] C. Northcote Parkinson loc. cit.

In setting up many of our improvement programs it is the avowed intention to eliminate waste. It is quite possible that in instigating procedures and techniques that are a part of the program we tend to negate the original concept of improvement. This is one reason why a true appreciation of the "break even point" in any system or course of action is necessary. Why not then clearly define targets or actual performances required in relation to any major Bureau sponsored task or program. In the Civil Engineering management field there are many areas that are adaptable to the performance approach. Among these are:

1. Training.
2. Design.
3. Construction.
4. Control maintenance program.
5. Utilities conservation program.
6. Transportation program.
7. Reporting systems.
8. Record keeping.

The basic policies and objectives of the Bureau of Yards and Docks are of value only to the extent that they are instruments of guidance and motivation. It follows therefore that key executives in the organization must relate themselves to specific program objectives which in turn are compatable with overall policy. In any one of the categories listed above: Maintenance, Reporting, Construction, et al it is possible to substitute specific performance targets for meaningless job descriptions. Why not provide for a "Budget of Management Performance" instead of:

"Responsible for the supervision of the controlled maintenance pro-

gram".

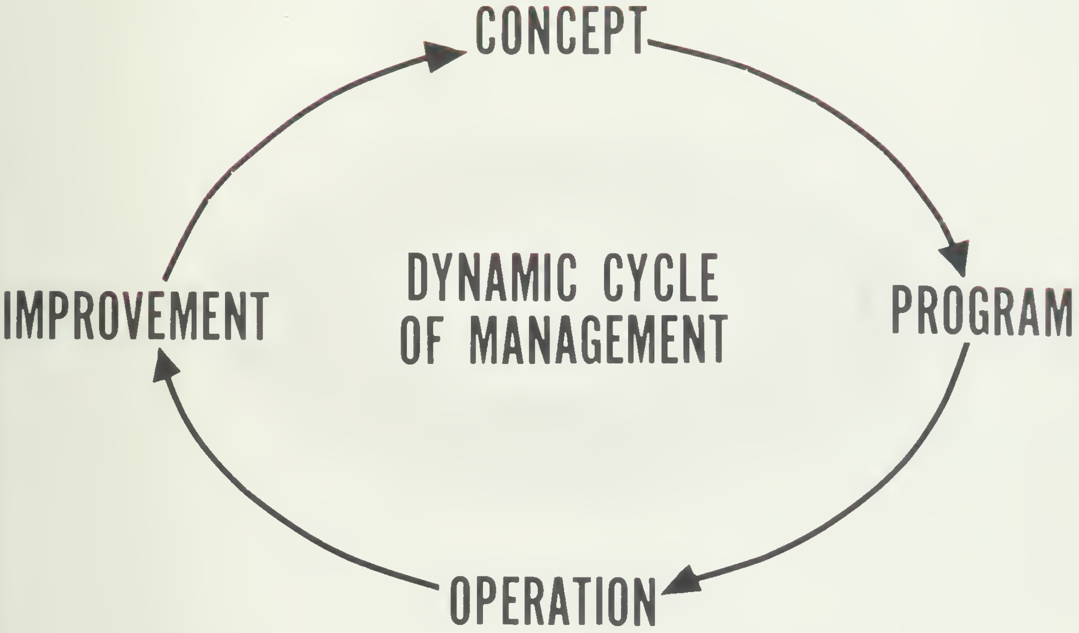
Substitute:

> "In fiscal year 1959 the maintenance division will increase the degree of implementation of the CMP to 100% for all CEN activities, etc."

This approach is infinitely valuable in bureaucratic type organizations. At the end of the fiscal year an analysis can be made of actual achievements. The variances can be cited and program "hold-up" sharply outlined. We can now give purpose to our records. Reports will contribute something to actual target achievement. Since this target is in line with Bureau policies and objectives we are setting up a team approach. It is a dynamic outlook that can be carried down to various lower levels. It permits and recruits the application of the judgment and human potential of the individuals in the department. It is their target and they will apply a vast store of ability and ingenuity to its development and attainment.

Many of our procedures are inclined to overemphasize the routine reports necessary for accountability, legal requirements and Bureau programs. This is not to say that all of these are not important and necessary. But most of us fail to relate these functional problems to the primary objective of the Bureau - which is, of course, to motivate the right people to take the right action at the right time.

The Navy today is a vital, dynamic thing, moving progressively forward. As a result the U. S. Navy, measured in terms of modernization, technological complexity and capital expenditures required per unit of asset, is expanding at a truly phenomenal rate. Many of our most urgent problems today have been created in part, by the fact that the requirements of management have expanded at a faster rate, than the tools, attitudes and philosophy available to the



THE ESSENCE OF THE INTEGRATED MANAGEMENT IN THE BUREAU OF YARDS AND DOCKS IS THE DEVELOPMENT OF POLICIES AND PROCEDURES THAT CAN BE CONTINUALLY IMPROVED THROUGH OBSERVATION AND EXPERIMENT.

senior officers to combat them.

This dynamic Navy requires dynamic management. Management should be founded on facts and reliable information. It should be capable of making decisions necessary not merely to maintain a "status quo" but, wherever possible to achieve improvements and efficiencies. A fundamental philosophy of merit would recognize that (1) change is inevitable, (2) progress is not inevitable, (3) when we cease to move forward, we shall start to slide backward.

PART II

AN INTEGRATED FACILITIES MANAGEMENT SYSTEM

CHAPTER V

AN INTEGRATED SYSTEM FOR FACILITY MANAGEMENT

Drucker[1] pointed out that one of the basic elements in the work of the manager is the job of measurement. Unfortunately up to a few years ago there was not compatability or coordination in the matter of management establishing or applying yardsticks of measurement in the operation of the Navy Shore Establishment. In the Navy system of separate bureaus there is a strong tendency for this condition to continue. The role of the District Public Works organization is critical in permitting the Bureau of Yards and Docks to make any contribution toward an integrated system of facilities management for the Navy. Performance should be analyzed, appraised and interpreted at the lowest level with the necessary knowledge of activity conditions and the required technical background. The District Public Works Organization can fulfil this function.

The primary programs that exist as measuring and controlling devices for operating efficiency in facilities management are:

a) Master planning.[2]

b) Inventory of facilities.[3]

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[1] Peter F. Drucker, The Practice of Management, (New York: Harper & Bros. Publishers, 1954) p. 344.

[2] USN, BuDocks Instruction 11010.21, Master Shore Station Development Program, 31 Jan. 58.

[3] USN, Bureau of Yards and Docks, Category Codes for Classifying Real Property of the Navy, BuDocks Instruction 11011.27, 1 Feb. 57.

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c) Military Construction Navy Program.[4]

d) Control Maintenance Program.[5]

e) Utilities Conservation Program.[6]

f) Transportation Maintenance Program.[7]

g) Annual inspection of Public Works and Public Utilities.[8]

h) Management Bureau annual estimates for Maintenance and operation.[9]

i) Special project requests.[10]

In general each one of these programs or reporting systems has the same objective i.e. efficient and economical operation. The difficulty arises when strong single program orientation can result in the cancelling out of any possible benefits. For example we often find the transportation program striving to cut down on the number of vehicles available to an activity due to a low usage rate. The usage rate in this case is an "average" consideration. It does not give adequate recognition to high volume, peak requirements for a short duration. It rather strives to dampen out the peaks and valleys so as to

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[4] USN, NAVCOMPT., Military Construction Financial Management Handbook, NAVEXOS p. 1570, 19 June 1956.

[5] USN, Bureau of Yards and Docks, Maintenance Management of Public Works and Public Utilities, TP-PW-33, 27 November 1956.

[6] Dept. of Navy, Bureau of Yards and Docks, Utilities Conservation Program Survey Guide, (Washington, D. C., 24 April 1957).

[7] Dept. of Navy, Bureau of Yards and Docks, Transportation Maintenance, TP-TR-2, 1 April 1952.

[8] USN, Bureau of Yards and Docks, Inspection for Maintenance of Public Works and Public Utilities, BuDocks Technical Publication TP-PW-31, 15 Aug. 55.

[9] USN, Bureau of Yards and Docks, Annual Estimates for Maintenance and Operation, (Approp. CEN), NAVDOCKS 1772 (Rev. 1-57).

[10] USN, Bureau of Yards and Docks, Policies and Procedures Governing the Submission of CEN Repair Projects, BuDocks Instruction 11000.4B, 10 Feb. 1956.

AN INTEGRATED SYSTEM GEARS

- MAINTENANCE
- OPERATION
- CONSTRUCTION
- DESIGN
- TRANSPORTATION
- PROPERTY RECORDS
- EXPENDITURE ACCOUNTING
- MANAGEMENT IMPROVEMENT PROGRAMS

TO:

THE NEEDS OF MANAGEMENT

provide maximum utilization during the work day period. On the other hand the maintenance control program attempts to achieve maximum utilization of productive labor. In this respect it desires to cut down overhead losses that would occur through waiting for transportation. The economic consideration involved is whether or not it is cheaper to have several vehicles available to transport workers during peak periods and let the vehicles remain relatively idle the rest of the time. This aspect is weighed against the labor cost in having high salaried employees waiting around doing nothing.

Other examples of management inconsistency can be found. A decision can be made relative to the amount of maintenance and operation funds and related personnel required. The activity simply circumvents this consideration by supplementing funds through a special project request. It is normally expected that these special project funds are for the support of work that can be more effectively prosecuted by contract. The ludicrous situation develops whereby activities year after year have a major portion of their operating complement supported by special project funds. In other words as far as the activity is concerned these special projects are simply another way of keeping up their personnel levels.

The role of the Bureau of Yards and Docks in the management field is a difficult one. It is dual in nature. It is staff or advisory in relation to activities under the control of other management bureaus. It is line "or command" in relation to the Civil Engineering activities.

Specifically the Bureau of Yards and Docks under the authority of Navy regulations exercises technical control of the alteration, repair, and upkeep of public works, public utilities, and weight handling equipment, except Marine Corps equipment assigned for technical control to another bureau or

office, as well as the operating standards and procedures pertaining thereto. Another interesting responsibility is indicated by Navy regulations. This established among the duties and responsibilities of the Bureau of Yards and Docks the following:

> Making an annual survey, and estimating the funds required for the maintenance of public works, public utilities, and construction, transportation and weight handling equipment at all shore activities of the Navy; and submitting appropriate recommendations in connection therewith to the responsible bureaus and offices having management control.[11]

Up to the present time BuDocks has fulfilled this responsibility in a very limited fashion. It has been most effective in the transportation program. Even here at times the "service" requirement has been lost. In the facilities area the BuDocks responsibility, before the development of the controlled maintenance program, had been relegated to the summary report of the annual inspection of public works and public utilities. To put it mildly the operating realities of the modern large scale Shore Establishment has made this report practically useless as a mechanism for achieving support for overcoming maintenance deficiencies. In 1956 the author recommended the elimination of the Annual Report of Public Works and Public Utilities and the integration of meaningful data into a combination report that would provide for the results achieved from the Controlled Maintenance Program and also supplant the existing work measurement system.[12] Basically the following conditions exist:

1. We do not know how much it costs to maintain specific facility items in the Naval Shore Establishment.

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[11] U. S. Navy Regulations, U. S. Government Printing Office, Washington, D. C., 1948, p. 51, Sec. 0455.5.

[12] LCDR John M. Daniels, "Controlled Maintenance in the 11th N. D." Paper read before meeting of Maintenance Directors of East Coast District Public Works Organizations, Philadelphia, July 1956.

2. We do not actually have a standard established as to what it should cost.

3. We have developed no techniques for spot testing management indices developed through our management programs.

4. We have no systematic procedure developed for the accumulation of beneficial engineering statistics.

5. There has been no method developed for the integration of management improvement programs recommendations into the budget formulation program.

Effective management must render decisions on a conceptual basis giving due consideration to all the factors outlined above. The inevitable conclusion is that there is need for a single coordinated system to determine the funding and/or staffing requirements for the maintenance and operation of the shore establishment. The objective of an integrated system for the evaluation of the maintenance and operation of public works and public utilities of the Navy is to enable the interested Bureaus to see and understand the results in fairly simple terms. In the development of such a system it is the contention of the author that the presently established accounting system of the Navy cannot meet the requirements of a modern management minded Bureau. Certainly accounting cannot provide for:

a) Setting the optimum objectives of Bureau programs.

b) Instigate action to attain objectives.

c) Measure effectiveness of programs and areas for revision toward increased efficiency.

The major contributions desired of an integrated system is that it fosters the conceptual skill in decision making.

Effective management control unfortunately is not a commonplace fact in the maintenance and operation of public works and public utilities in the shore establishment. Less many react in righteous anger at this statement I make

INTEGRATE

THE RESULTS OF MANAGEMENT IMPROVEMENT PROGRAM INTO THE BUDGETARY PROCEDURE

TRANSPORTATION COST CONTROL
FACILTY RATINGS
MAINTENANCE CONTROL PROGRAM
UTILITIES CONSERVATION PROGRAM

haste to add, that effective control is not exercised because under our present operating concept it is not a necessity. Appropriations are received not as a result of operating results, but in recognition of the established role of an activity in the overall picture. As a consequence some activities are similar to a business in a rapidly expanding market. Sales come quickly without much effort, margins are wide, and the market is a "cream" rather than a "skimmed" milk affair. In the military establishment when "hard times" do come the process is one of retrenchment across the board usually on a common percentage cut or "meat ax" approach. There therefore is no particular incentive for the close control concept by local management when they are likely to be hit just as hard as the man who is not operating efficiently and who has a "lot of fat" that can be cut.

It would be a gross injustice to our responsible officers to leave the impression that they are not concerned with performing an effective job. They are victims of a budgetary system that does not recognize the differentials of management efficiency. Worst of all it is a system that holds out nothing but condemnation for failure, with no positive awards and recognition for top management performance. A common case in the military establishment is the situation where our management seeks to exercise control but does an ineffective job. It is often the practice to collect figures in great detail on operations under the illusion that the existence of reams of data gives control. Unfortunately we have inadequate standards with which to compare the data. The work measurement system is better than nothing, but it depends too much on historical data, and the development of an average.

The Bureau of Yards and Docks by establishing and placing emphasis on an integrated system for facility management recognizes and attempts to fulfil its

technical responsibility in that area. The role of BuDocks is a staff one. Not insignificant to the success of this role is the necessity of fulfilling the service demands of the other management Bureaus. Historically in every instance that BuDocks has failed in this regard the other bureaus do not hesitate to provide their own organizational units to provide the same functions. This leads only to duplication, uneconomical operation and the adoption of a wide variety of forms, procedures, techniques and standards. It has also led through the years to the usurption by default of some of BuDocks functions. The integrated system must provide management data that is (1) current, (2) easy to interpret, (3) readily applied.

The broad objectives of the management improvement programs are as follows:

1. Definition of problem areas.
2. Conservation of senior officer time by management by exception.
3. Increased worker morale.
4. Improved work output both as to quality and quantity.

The variety of management reports that are a part of the programs presently developed can significantly contribute to the attainment of these objectives. They are only guides and aides however and must be supplemented by other sources of information. If this point is not clearly realized then instead of achieving desirable goals we will contribute to inefficiency by:

a) Concealing and worsening problem areas.
b) Wasting time of top management.
c) Accumulating a mass of useless data.
d) Creating worker discontent.
e) Decreasing output and quality of work.

f) Establishing animosity, lack of cooperation between activity departments and Bureaus.

g) Influence foremen to misrepresent operating data.

In discussing the "ideal" program for an integrated management system with various individuals in the Bureau of Yards and Docks I have been impressed with the apparent belief that exists with many people that all management prob- ,ems can be distilled down into one factor "X". The study for an integrated reporting system is even referred to as "Project X". "It is true that most well organized businesses have a single key figure which by itself reflects the over-all position of the business with remarkable exactness".[13] In these cases however the key figure is usually ferreted out through investigation of the contributions made through various interrelationships in the organization. Attainment of improvement is achieved through the intelligent analysis of the contributing factors. The moving average trend of a key index figure can become an essential part of the higher management control method but it is dangerous to rely on any one single index of efficiency. There are many methods of measuring efficiency. The basic approach is:

1. Number of units completed or produced.

- related to -

2. Time in man hours to accomplish.

A good index figure is not necessarily good management. This is especially true in the field of facilities management. Here a fundamental question is not only cost, but also what is the condition of the facilities. Should the money have been spent in the first place? Is the installation being over or under

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[13] T. G. Rose and Donald E. Farr, Higher Management Control, (McGraw-Hill, 1957), p. 76.

maintained? Any integrated system for public works management in the Navy must provide for the considered review of management in regard to:

a) Facilities condition.

b) Inventory levels.

c) Extent of "special" projects for maintenance support.[14]

d) The "true" trend of maintenance costs and overhead.

Every activity wants to look good. A system to be integrated must be balanced. There is no real gain if in attempting to achieve a favorable index rating an activity acts in a manner to impair real efficiency. The words of William Forte Whyte are appropo in this instance:

> For all the attention some managements may give them today, workers are still at the bottom of the industrial pyramid. They are the only people in the production organization who receive orders and who have no one below them to whom they can give orders. Management is constantly originating activity for them. In many cases they have little opportunity to originate back to management. In or outside of industry, when this one-sided origination situation exists, we find the people in the bottom position developing some resentment against the people who are always originating for them. Consciously or unconsciously they build up a self-defense organization to resist the changes that management is imposing.
>
> In effect, workers are trying to achieve some control over their jobs and over their own fate in the department. They are trying to work at a pace comfortable for them instead of one imposed by management. They try to build up a stable production situation on the assumption that if production is stable management will not be able to press for more production. If the worker put out 150 units yesterday and puts out only 100 today, he fears that the foreman will want to know why he is not putting out 150 every day. To protect himself against such pressures he prefers to put out 125 regularly, or, still better, he would like to produce 150 when conditions are right and he feels like producing but only turn in for credit 125 units and keep the other 25 in a "bank" where they can be pulled out for credit on a day when he has made only 100.
>
> As we have seen . . . the workers get satisfaction out of

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[14] As used herein the author defines special projects as those which provide for the correction of a maintenance deficiency but which are not financed from the stations regular M & O allotment.

> taking conspicuous leisure. They work hard to reach their quota, but then take the time gained to flaunt their independence of management pressures. These pressures will be felt as long as activity is originated primarily, and almost exclusively, downward upon the workers.[15]

The Bureau of Yards and Docks must give the utmost emphasis to the limitations of the operating indices which will be a part of an integrated system. This is a mass education task. All members of the Civil Engineer Corps must develop the proper perspective and it must then be transmitted through out the Navy Shore Establishment. If this is not done the program will fail. Management Bureaus will have no faith in the data developed. Drucker in discussing the practice of management stated:

> Nor is it enough to find the right answer. More important and more difficult is to make effective the course of action decided upon. Management is not concerned with knowledge for its own sake; it is concerned with performance. Nothing is as useless therefore as the right answer that disappears in the filing cabinet or the right solution that is quietly sabotaged by the people who have to make it effective. And one of the most crucial jobs in the entire decision making process is to assume that decisions reached in various parts of the business and on various levels of management are compatible with each other and consonant with the goal of the whole business.[16]

It is perhaps important at this point to clarify the position of the author. I am not opposed to the need for the Bureau of Yards and Docks to aggressively develop and implement the type of system that has been described. On the contrary there would probably be more justifiable criticism on the heavy emphasis and single minded belief that I have that only by such a program can the Bureau attain its rightful status and fulfil its assigned role. The problems that are anticipated are not due to the system. The methods of computation and the fac-

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[15] William Forte Whyte, Money and Motivation, (N. Y. Harper and Bros., 1955), p. 234.

[16] Peter F. Drucker, The Practice of Management, (N. Y. Harper and Bros., 1954), p. 353.

tors involved are capable of definition and resolution. The difficulty is that management may misuse and negate any inherent value. Indices are not capable of dictating action without the aid of judgment or careful weighing of information obtained from varied sources. It is important to know that:

The integrated management system cannot:

1. Make management decisions - these must still be made by management.
2. Provide judgment - decisions are still based on judgment.
3. By themselves make a decision effective.

The integrated management system can:

1. Sight objectives for management areas.
2. Assist in establishment of operating rules.
3. Help in segregating problem areas.
4. Be potent means for making the wrong decision.

This matter of making the wrong decision on the basis of collected figures is the horrible consequence of "management mis-managing". It is necessary to measure the important aspect of reality. Efficiency is not an item. It is a whole "equation". For example assume that the "efficiency equation" comprises certain factors in a relationship such as the following:

Cost: Quality as Production: Backlog

We do not increase efficiency by improving only a factor that shows the relationship between two variables, say cost and production. This could look favorable while actions in regard to quality and backlog actually drag down true management and operating efficiency.

THE INTEGRATED SYSTEM

CAN

SIGHT OBJECTIVES

ESTABLISH STANDARDS

SEGREGATE PROBLEM AREAS

CANNOT

MAKE DECISIONS

PROVIDE JUDGEMENT

INSURE EFFECTIVENESS

THE MANAGER MUST INSURE THAT THE INTEGRATED SYSTEM IS NOT A POTENT INSTRUMENT FOR MAKING THE **WRONG DECISION**

COST OF CONTROL AND THE BREAK EVEN POINT

The break-even point in management improvement program is that point where the maintenance of control requires the expenditure of so much money that the benefits of control are consumed by the cost of securing it. The following story illustrates this point:

> Let us suppose that I am the owner of a cow. The purpose of a cow is to produce milk. If you turn the creature into a pasture and allow her to eat grass she will produce many quarts of lacteal fluid. The process consists of eating grass, transmuting it into milk, removing the milk from the udder. However, you are infected with the system disease. You cease to be interested in milk. You hire inspectors to count the number and measure the height of the blades of grass eaten by **your** cow. You count the number of steps she takes in the pasture. You time the number of occasions upon which she looks over the fence, and test the volume of sound produced when she moos. Then you employ a bookkeeper to record these items, and various persons to make out forms for the guidance of the bookkeeper. At the end of the year you have a vast and entertaining volume of information, but you have added so greatly to the cost of your operation by systematizing in this manner that you lose money on every quart of milk you sell. This, of course is exceedingly modern and in accord with business practice, but you find yourself compelled to sell your cow to pay your overhead.[17]

In consideration of the inherent values and shortcomings that have been discussed it may be possible to outline a procedure recommended for BuDocks level in the formulation of the program details.

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[17] Author unknown quoted from Harry Hansen, Marketing: Text Cases and Readings, (Irwin, 1956) p. 498.

THE MATTER OF MAKING THE WRONG DECISION ON THE BASIS OF COLLECTED FIGURES IS THE HORRIBLE CONSEQUENCE OF "MANAGEMENT MIS-MANAGING".

IT IS NECESSARY TO MEASURE THE IMPORTANT ASPECT OF REALITY

CHAPTER VI

CORRELATION OF INVENTORY CODE AND EXPENDITURE ACCOUNTS

One of the short comings of management improvement programs is that in their quest for broad program objectives they overlook certain basic and fundamental administrative deficiencies. Efficiency is a relative term. When you speak of improvements achieved it is in relation to the results of another period. The difficulty is that it is not possible from our present expenditure accounts to determine how much money we did spend in the maintenance and operation of public works and public utilities to the extent required for management improvement programs at the activity - Bureau level.[1] This is an untenable situation. The time finally comes when you have to prove the case. Until this is accomplished a specific segment of our management group will continue to doubt the worth of such programs.

As a result of the present deficiencies many Bureaus have set up a duplicate system of accounting. Examples of this are found in the Bureau of Aeronautics and the system in use by the Marine Corps.[2] Due to the fact that the expenditure accounts often reflect an odd accumulation of costs under the same heading, they are not directly adaptable for management use. The "management reporting systems" which have been adopted in most instances would require

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[1] Office of the Comptroller, Department of the Navy, Navy Comptroller Manual, NAVEXOS P-1000, (Washington, D. C., 26 Feb. 1957) vol. 2, chap. 4.

[2] U. S. Marine Corps, Quarterly Maintenance Cost and Man-Hour Report, NAVMC 10050 - SD (Rev. 2-57).

posting to a six or seven digit account number to accumulate the information desired under the expenditure accounts. The maintenance and control program of the Bureau of Yards and Docks in similar fashion was required to adopt a supplemental management reporting system. In this case it was necessary to provide statistics by work centers (shops). It was concerned with individual jobs and related these jobs to specific shops. Although the accumulation and processing of the cost data was not processed through the NFAO it was necessary to call upon the services of local district machine accounting activities. In the early days of the programs the results were not exactly ideal. Management programs took and still take a definite secondary role. The situation reached the state where it required the rather drastic action of an instruction from the Comptroller of the Navy to all Bureaus. Pertinent excerpts are as follows:

> Responsibility of dependent activities. It is the responsibility of official accounting activities to comply with accounting instructions issued by appropriate authority. Official accounting activities also are expected to comply with all reasonable requests of dependent activities for further accounting and the furnishing of reports . . .
> . . . and issue appropriate instructions in the premises to all activities under its management control. The instructions should include the proviso that problems concerning accounting services which cannot be resolved locally will be transmitted through management channels to the respective bureaus for solution. This office does not desire to arbitrate these matters as a general rule; therefore, only those cases wherein exhaustive efforts to compromise on the part of the respective management bureaus have proved to no avail will be transmitted to this office for decision. In this connection activities performing accounting shall be prohibited from refusing to perform reasonable services for dependent activities solely on the basis of lack of personnel or facilities without the prior approval of the management bureau of the accounting activity.[3]

This has resulted in a great improvement in this support area but the entire field of management reporting versus the "cost reporting" of the expenditure

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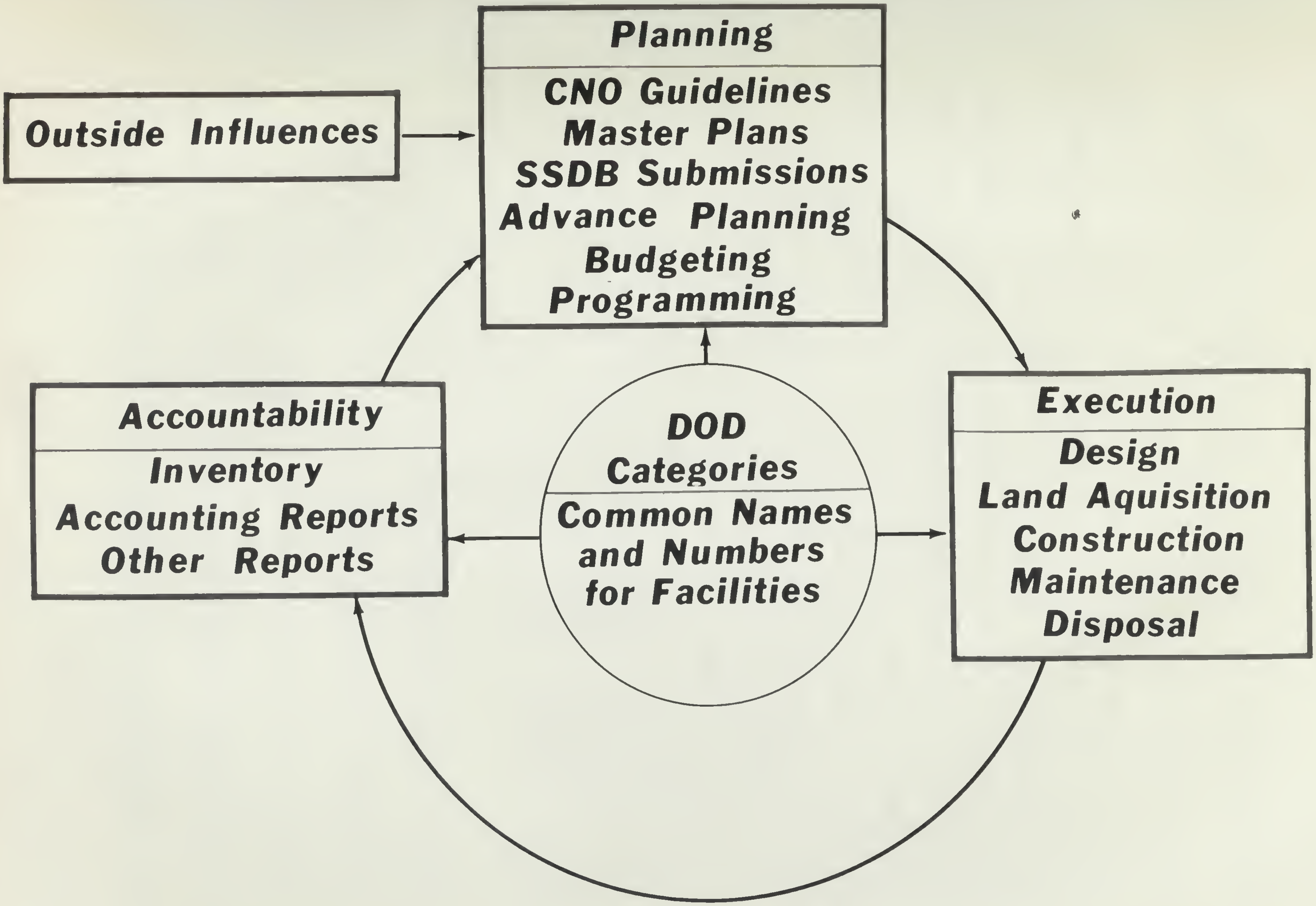
[3] U. S. Navy, Comptroller of the Navy, Official Accounting Activities; Maintenance of Accounts and Preparation of Fiscal and Related Management Reports for Dependent Activities, NAVCOMPT Instruction 7300.29, May 10, 1957.


Outside Influences
Planning
CNO Guidelines
Master Plans
SSDB Submissions
Advance Planning
Budgeting
Programming
Accountability
Inventory
Accounting Reports
Other Reports
DOD
Categories
Common Names
and Numbers
for Facilities
Execution
Design
Land Aquisition
Construction
Maintenance
Disposal

account system is a wide open field. It is ripe for a detailed study which is beyond the limitations of this paper.

On 11 March 1955 the Department of Defense introduced an instruction establishing uniform facility classes and construction categories together with a numerical code for use in identification and classification of real property.[4]

This code was at the three-digit number level. The Bureau of Yards and Docks was assigned the responsibility by the Secretary of the Navy for establishing and issuing a more detailed breakdown of the categories.[5] This required the use of additional digits and descriptions for internal use within the Department of the Navy. It was clearly demonstrated that the same coding and nomenclature should exist from the planning and construction through accountability, maintenance and eventual survey and disposal. The chart on page 52 illustrates this concept. On 1 February 1957 the Bureau of Yards and Docks by BuDocks instruction 11011.27, Category Codes for Classifying Real Property of the Navy, promulgated a series of five digit category codes for classifying real property of the Navy. The five digit category codes included in this instruction are to be used in all programs and systems in the Navy requiring the classification of real property as follows:

a. They shall be used in the inventory of real property (plant account) when and as directed by the Comptroller of the Navy.

b. They shall be used in facilities planning for peacetime and mobilization purposes when and as directed by competent authority.

c. They shall be used by field construction agencies of the Bureau of Yards and Docks (District Public Works Officers, Area Public Works

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[4] Department of Defense, Department of Defense Facility Classes and Construction Categories, DOD Instruction 4165.3, March 11, 1955.

[5] USN, Secretary of the Navy, Department of Defense Facility Classes and Construction Categories, SECNAV Instruction 11011.6, 21 Mar. 1955.

> Officers and Directors of Overseas Divisions) in the execution of design and construction of the Military Construction Program when and as directed by the Chief of the Bureau of Yards and Docks.

The Navy codes essentially are a refinement of the following facility class codes:

100 operational and training facilities.
200 maintenance and production facilities.
300 Research, development and test facilities
400 supply facilities.
500 hospital and medical facilities.
600 administrative facilities.
700 housing and community facilities.
800 utilities and ground improvements.
900 real estate.

For example under:

- 100 operational and training facilities.
  - the category group 110 would be Airfield Pavements.
    - the basic code 111 would be Airfield Pavements Runways.
      - the Navy code 11110 would be a Runway.
        11120 " " Helicopter Landing Pad.
        etc.

The problem of the present system arises from the inability of the expenditure accounts to represent specific facilities. For instance the present expenditure account No. 44511 which provides for the charges for maintenance of airfield pavements, concrete, reads as follows:

> 44511 Airfield Pavements Concrete
>
> The pay of civilian labor and the cost of supplies and service used in the maintenance of runways, landing strips, helicopter landing strips, LTA landing mats, UTO pads, taxiways, maintenance aprons, parking aprons, access aprons, operational aprons, working spaces adjacent to hangers, and all other miscellaneous airfield pavements such as aircraft washracks, compass swing bases and seaplane ramps. Exclude cleaning and snow removal.

From this it is apparent that it is not possible to obtain the cost of maintaining runways by dividing the total charges against account no. 44511 by the number of square yards of runways shown on the Navy inventory code 11110. In

fact it is even more complicated by the fact that in many instances management requires additional breakdown such as:

a. Type of runway: asphalt or concrete.

b. Type of building: permanent or temporary.

Some people maintain that the broad unit costs which can be derived from the present expenditure accounts are all that is required. This is true if the objective is to manage the entire Navy as a unit. In order to compare the Navy to the other branches however, it would still be necessary to provide a uniform Department of Defense system for classifying the inventory items that are comparable to the expenditure accounts and one that is used by all the services. The actual expenditures involved in the management of facilities takes place at the station level. It is desired to develop standards that can be used for the achievement of efficiency and a realistic approach to budgeting. The expenditure accounts should be in sufficient detail to achieve this end. The management program in addition should have a "built-in" mechanism to consolidate or refine the expenditure accounts as cost experience is accumulated.

Recognition of the general problem led to a request by the Chief of Civil Engineers to the Comptroller of the Navy, for the establishment of a panel to devise ways and means of obtaining maintenance costing which is compatible with the inventory and construction program.[6] As a result the author was privileged to be named to the panel for the necessary study. The panel interpreted its mission to be:

a. The development of cost classifications for the maintenance of class I and II real property the the end that
    1. They would integrate with the Navy category codes (5

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[6] See page iii of Appendix.

digit numbers used for inventorying Navy Real Property as established by BuDocks instruction 11011.27 of 1 February 1957).

2. They would accumulate costs by comparable facilities.

3. They would contribute to the development of standard maintenance costs as a part of a funding and evaluation system to be later developed.

b. The development of cost classifications for other maintenance operations and services performed by public works departments or equivalent organizations in the Navy, including overhead accounts. The degree of detail in which these cost classifications will be established and their relationship to certain NAVCOMPT cost affounting hand books has not been resolved to date. The various factors bearing on this aspect of the problem will be discussed in a later chapter.

The ideal situation would be to have exactly the same number representing the inventory item and the expenditure account. If this was possible expenditure account no. 4411110 would represent maintenance of a runway. The 44 representing the maintenance expenditure series and the 11110 representing the runway (exactly the same as the inventory item). Note that this requires a seven digit account number. NAVCOMPT advises that the NAVCOMP form 632 basic punch card (see page) for the Navy Central Fiscal and Accounting Report System does not have room for expansion of the expenditure account number to more than its present five digits.[7] On this basis therefore any development must be within a five digit system. While it is true that some manipulation may be possible to save a number, an additional problem arises when it is desired to differentiate between types of material used in construction. The permanency of construction must also be considered. This leads to the advisability of simply resorting to a series of numbers that will "match" by means of a conversion table. The necessity for doing this is to be deplored. It is the only practical expedient considering the amount of confusion and inordinate amount

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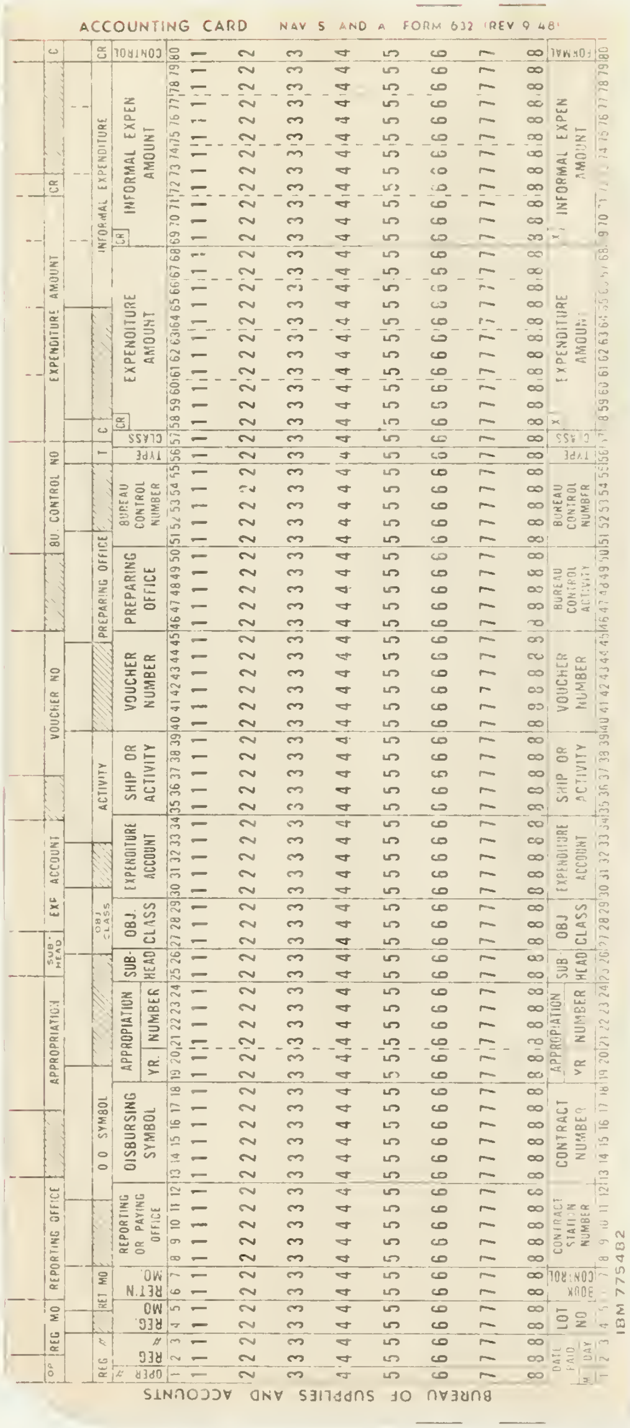
[7] Telephone interview by Oscar Lightner with Ben Dozier, Head Central System and Contract Branch, Office of the Comptroller, Dept. of Navy, March 21, 1958.


ACCOUNTING CARD NAV S AND A FORM 632 (REV 9 48)
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SHIP OR ACTIVITY
VOUCHER NUMBER
PREPARING OFFICE
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of record changing that would result if the inventory class codes were changed. It does illustrate the danger of starting a program such as the inventory of real property without clearly following through on the "big picture". The results of the panel's work to date are a part of this report.[8]

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[8] Refer to page 116 of appendix.

CHAPTER VII

DEVELOPMENT PROCEDURE

The compatibility of the expenditure account system[1] and the inventory of class I and II items[2] of the Navy Shore Establishment as formulated by the working panel may be expressed as the first stage of the development procedure for an integrated management system. It appears that from such a system could evolve a uniform method for synthesizing data and determining the staffing and funding requirements for the adequate maintenance and operation of the Shore Establishment. A complete list of the elements for the program development would be:

1. Correlate inventory of all class I and II items of the Navy Shore Establishment with expenditure account classifications.

2. Make a complete inventory of existing accounting and management reports used by all divisions of the Bureau. Determine exactly what they do and do not reveal. Who uses them. Who should use them. Who gets them. Who should get them. This also requires the determination of the relationship of decision making to functional areas. What data is required. How is this supplied from existing sources. What supplement information is necessary. Let us be critical in our self analysis.

3. Develop non-fiscal accounting sources and channels for facilities management data through the medium of the District Public Works organizations.
This information is required for Navy Wide facilities management decision making.

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[1] Navy Comptroller Manual, loc. cit.

[2] BuDocks Instruction 11011.27, loc. cit.

4. Organize within BuDocks to permit integrated administration.

5. Obtain the support of SECNAV through a SECNAV directive requiring integrated facilities management.

ANALYSIS OF EXISTING REPORTS

It has been previously mentioned that the annual inspection summary report which BuDocks utilizes to fulfil its responsibilities concerning specialized and professional guidance for public works and public utilities has lost a real measure of meaning as a management tool. On the other hand the inspection for maintenance for public works and public utilities as covered by NAVDOCKS technical publication TP-31 constitutes a valuable portion of the continuous inspection phase of the control maintenance program. One reason that the annual inspection summary report has lost any import is due to the fact that the summaries are not requests for funds. Funds to correct the deficiencies indicated are requested, where necessary, in accordance with applicable directives issued by the various Bureaus and offices of the Navy Department. The real attention by management is paid to the special requests for funds for major non-recurring maintenance items.

The existing condition suggests the value of a single facility program manual for the information and guidance of the Navy Shore Establishment. It is intended that this program including the same procedures, forms, etc. will be adopted Navy wide for the use of all Management Bureaus and the Marine Corps. The existing annual inspection summary (report BuDocks 11012-1) will be cancelled.

A new report titled Facility Program Report will be established to provide information to the cognizant Management Bureau or its field representative

and to employ the technical assistance of the Bureau of Yards and Docks. It is part of an integrated system of facilities management in that it:

1. Outlines deficiencies in existing building, structures or facilities.

2. Includes a facility condition rating.[3]

3. Provides military commands with information on the fiscal condition of an activity as a result of the coordinated procedures of the controlled maintenance programs.

4. Provides information and guidance in budgeting and obtaining Bureau funds for various facility programs for specifically correlated maintenance and improvement projects to the ability of the activity to support out of its regular maintenance forces and allotment. (As indicated by the amount of deferred maintenance).

The report will be composed of the following major elements:

a. Management Report No. 3 of the Controlled Maintenance Program.

b. A plant equipment program.

c. A major non recurring maintenance program.

d. A minor new construction and improvement program.

e. A facility conditions rating.

f. A consolidated priority list.

The details for the present preparation and submission of Management Report No. 3 is covered in NAVDOCKS technical publication TP-33 MAINTENANCE MANAGEMENT OF PUBLIC UTILITIES. Basically this report is designed to:

1. Inform management of the necessity to rearrange, increase, or decrease the shop forces.

2. Indicate the extent of current and forthcoming authorized work in relation to the availability of on board manpower to absorb the load.

This report is prepared weekly at the local activity level. The cog-

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[3] See page 79 for details of "facility condition rating".

nizant District Public Works Officer reviews and analyzes the report monthly. Quarterly the DPWO will average each item of the report for the preceeding three months and forward to the Bureau of Yards and Docks an average report plus a copy of the last report received and a copy of the quarterly deferred backlog statement. *

The quarterly deferred backlog statement lists the estimated dollar cost of all items of deferred maintenance of class 2 and 3 property. This information is obtainable from the suspense file of the inspection records system of the control maintenance program. It includes the estimated costs of correcting all substandard conditions reported but for which funds are not available. Included are maintenance projects for which funds have been requested from the parent management bureau but which have not been authorized. The estimated costs of deferred maintenance for class 2 property is summarized by the category codes for classifying real property of the Navy. It will be remembered that by a previous study[4] a system was developed whereby these codes will be made compatible with the expenditure account system. The present deficiency is that a list such as the following does not have any particular management value for control at the Bureau/activity level.

DOD Facility Class	Title	Deferred	Replacement
100	Operating and Training Facilities	-	-
200	Maintenance and Production Facilities	36,390	-
300	Research and Test Facilities	-	-
400	Supply Facilities	-	-
500	Hospital and Medical Facilities	-	-
600	Administrative Facilities	-	-
700	Housing and Community Facilities	680,225	19,655
800	Utility and Ground Improvements	1,531,990	173,360
900	Class III Property	35,850	-
		2,284,455	193,015

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[4] Refer to page 53.

The information presently submitted with management report no. 3 may be helpful at Bureau/DOD level to represent a total deferred maintenance for general information at Congressional hearings. In order to avoid duplication and permit widest management application however, it whould be revised to include the list of the specific projects and the estimated cost by project.

The timing of the submissions will be such that the last quarterly report will arrive in BuDocks so as to permit processing to the cognizant management bureau on or before 1 Feb. This last quarterly report will also contain individual description and justification sheets.[5] Once a detailed description and justification sheet has been submitted it will not be necessary to resubmit this data. The exception would be if the scope or the estimated cost of the project had changed in the interim period. In the meantime the listing of the project title and estimated cost on the consolidated priority list will be sufficient. The proper development of an adequate facility program reporting system can correlate the following factors:

1. Condition of facilities.
2. Capabilities of station shop forces.
3. Local priority given to maintenance versus "capital improvements".

It is considered to be of vital importance to establish an independent role for the maintenance requirements of an activity. The requests for major non-recurring maintenance items should not be a catch all for poor management. It is time to require the application of "maintenance planning" to eliminate major progressive deterioration, at the same time that adequate maintenance forces are

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[5] See page 95 of Appendix.

assigned.

UTILIZATION OF DPWO

A year ago there would have been justification for believing that such a program was impossible. The author's experience with the implementation of the controlled maintenance program in the 11th Naval District had revealed the juxtaposition of the Bureau of Yards and Docks with the other Bureaus led to varying degrees of interest and support. A recent instruction of the Secretary of the Navy with Navy wide distribution in the Bureaus and activities of the Shore Establishment has completely altered the outlook. Pertinent quotes from this document are as follows:

> The only present means to partially close the gap between fund requirements and fund availability is improved management to insure fullest utilization of manpower and material. The way lies in the wide acceptance and more complete utilization of the Navy's maintenance Management Program. - - -
> Management bureaus and offices will accelerate the adoption of the procedures - - - to the fullest extent possible and will require activities with public works type functions to submit management reports to the Bureau of Yards and Docks via the cognizant Director of the Bureau of Yards and Docks Overseas Divisions, District Public Works Officer or the Area Public Works Officer.
> - - - District and area public works officers will conduct staff visits as required to shore activities with public works type functions to assist in the adoption of procedures. - - -[6]

The possibility for the complete development and utilization of the SECNAV directive in an integrated program is startingly clear. It is the perfect medium for developing the non-fiscal accounting services and channels via the District Public Works organizations. It is here that something besides forms and figures can be provided. Routine reporting fills file cabinets.

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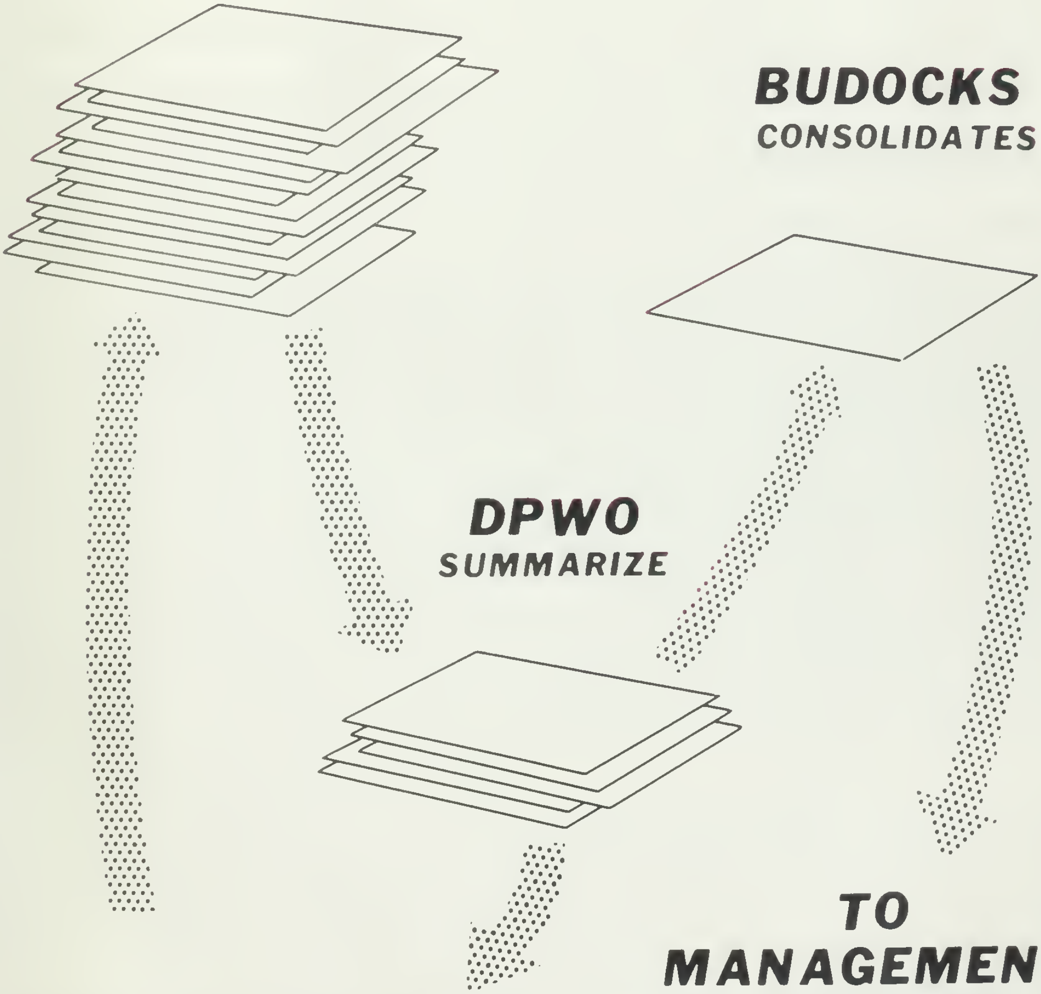
[6] USN, Secretary of the Navy, Maintenance Management of Public Works and Public Utilities, SECNAV Instruction 4720.1, 21 February 1958. Refer to page 109 of Appendix.

PROGRAM CONSOLIDATION



ACTIVITY REPORTS

BUDOCKS
CONSOLIDATES

DPWO
SUMMARIZE

TO MANAGEMENT BUREAU

FIELD ASSISTANCE

1. FACILITY RATING
2. UTILITIES CONSERVATION SURVEY
3. CMP

Advisory reporting gets action. A control technique should be dynamic and alive to sustain interest. This requires the definite establishment of a particular relationship between the DPWO and activities. In some cases it requires a change in relationship. This is particularly true of Marine Corps activities. The objective*is the development of realistic practical management information. It is not a police action based on recriminations and explanations. This is a process of learning - and greatest deficiency "knowledge-wise" exists at the levels of management removed from the station activity. Following are some interesting comments concerning retention of control. They concern the sphere of commercial and industrial enterprise. It is not difficult to make an interesting correlation in the discourse to Navy management problems:

> Small company managers are understandably concerned over the problem of keeping "control" of their firms. In an effort to achieve this objective, they are frequently reluctant to bring outsiders into management. Some are hesitant to release anything but the most general information about their firms and are especially secretive about financial data. It is with good reason that many small concerns are referred to as "closed corporations".
>
> Such a negative and hostile attitude toward outside interest seems to be based on fear - the owner-manager often seems to feel that he can maintain full authority unchallenged only if no outsider has information on company affairs. Many small businessmen fear that outside interests once given a toe hold, will attempt to seize control, probably with the aim of pursuing shortsighted or poorly conceived policies, detrimental to company well-being. Some small company managers can cite examples of this kind of thing, to prove a tangible foundation for their fears.
>
> In some cases studied, however, where precautions against outside interference has been most rigorously applied, loss of control by the family or management group had resulted. Paradoxically, in other small firms which operated more on an "open door" policy, inviting outsiders to share in both management and owner-ship, the original leader had remained firmly entrenched. In such cases management went on the assumption that control is more than a product of secrecy and 100% stock ownership. They believed that in the long run a management strays in power only if it can provide a strong and effective team manned by the best executives available without limitations of family affiliation or ownership. Control, from this point of view does not necessarily mean owning 100% of the stock or even 51%. Rather, it

[illegible]

> [illegible]
>
> [illegible]
>
> [illegible]

> means maintaining a well administered operation which commands the respect and support of all ownership groups and the public. Strange as it may seem, when management is willing to give up some elements of control, it often strengthens its position of leadership and improves the firm's chances for profitable operation.[7]

An integrated facilities program of the Bureau of Yards and Docks in relation to the other management Bureaus is not a matter of usurption of control. It is the desire for an opportunity to give service. The integrated program or system is the device or mechanism involved.

Remember that it is not possible to devise a system that represents total reality. Management must manage and it cannot be replaced by rows of fancy figures. The task of the Bureau of Yards and Docks is to build usefulness into the integrated program. The balanced program eliminates any illusion of 100% accuracy. Even now there is a tendency toward reports that are too narrow in scope.

> When the incoming figures have immediate sifnificance where it is not necessary to wait and see what they mean, there is every incentive for you to be on your feet using foresight rather than on your tail using hind sight. Management can move - and move fast - before things happen, not after.[8]

In determining what data is required to permit decision making in specific functional areas it is necessary to point out that we are speaking of a concept that is broader in scope than the Controlled Maintenance Program. The integrated system deals with all of the public works management. The CMP is concerned only with the maintenance shops or work centers. If it is accepted

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[7] C. Roland Christensen, Management Succession in Small and Growing Enterprises (Boston, Division of Research, Harvard Business School, 1953), pages 215-216.

[8] Fred V. Gardner, "Break Even Point Control for High Profits, Harvard Business Review, (Sept. - Oct. 54), p. 130.

that the primary mission of the public works department is the maintenance and operation of facilities then it is possible to adopt an industrial approach of production and overhead. Prime costs would be represented by the maintenance shops and the utilities operations. Overhead costs would be the design and administrative functions. Budgeted standards for these categories could be made as a fixed percentage of a maintenance workload factor based upon:

1. Number of shop personnel.

2. Service requirement support to other commands.

3. Size of activity (present or approved for future planning. This is a point of significance since the major effort of some design departments may be devoted to unrealistic planning that has no possibility of realization. The complement may also serve to duplicate service support available from the DPWO).

In so far as practical these functions should be completely integrated into the revised expenditure accounts. In fact there is no reason they cannot be treated similar to class I and II items. i.e. Inventoried as to size, type and composition and related to a budget (operation) standard. This data to be treated similar to a plant account card with requirements for revisions, updating, etc. as required. This would have the advantages of:

1. Better control of "indirect overhead costs".

2. Permit a consistent budget procedure.

SUPPORT OF SECNAV AND DOD

It is true that the installation of an integrated program for facilities management requires the publicly expressed support of the Secretary of the Navy.

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[9] This point may tend to be confusing since there are overhead costs within the maintenance shop and utility operations. Perhaps it would be better to consider the overhead in the shops as direct overhead and costs associated with design, administration et al. as indirect overhead.

The reason for this should be apparent from the previous discussion on the management Bureau relationships.[10] It is not so well known however that such a program would be welcomed with "open arms" not only by the Secretary of the Navy but by the Department of Defense.

The reception that a well developed program would receive is indicated by following excerpts from a letter F. A. Bantz, the Assistant Secretary of the Navy (material) to the Honorable Clarence Cannon, Chairman, House Appropriation Committee, (entire transcript contained in appendix page 112.

> . . . . I recognize, as do all others involved in the complex problem of developing and maintaining an adequate shore establishment, that our procedures have not been entirely adequate.
>
> . . . . The problem areas . . . . will take time to correct and will require a continuing effort over a period of years.
>
> . . . . Integrated System of Facility Management. We have had under development for some time the Integrated System of Facility Management. This involves tying together policies, practices, and procedures for all aspects of facility management running from conception to disposal of facilities. Backed up by the extensive use of the most modern mechanized techniques for data processing and analysis, this system utilizes the principle of applying a common cataloging nomenclature to all aspects of facility management -- planning, programing, budgeting, construction, maintenance, and disposal.

It is interesting to note that the present concept of an integrated system is apparently restricted to the aspect of a common cataloging nomenclature. This is only the start of an effective management program. The other features of a complete program which have been previously outlined[11] are essential if we are to achieve more than an inventory list.

The complete integrated program is bound to come. If the Bureau of Yards and Docks cannot furnish it then someone else will. It is a Bureau of Yards and Docks responsibility by virtue of its assigned mission.

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[10] Refer to page 64.

[11] See page 59.

CHAPTER VIII

PROBLEMS OF ORGANIZATION RELATIONSHIPS

Owens[1] points out that in a small organization regardless of the legal form, such as a partnership, or a corporation the owners may have continuous personal contracts with the business and may orally convey information as to the program of action in each situation as it develops. As the organization grows in size, the owners will have difficulty in maintaining personal supervision over the employees in the day to day activities and will find it necessary to employ other persons as supervisors. In time other layers of supervision may be necessary and the owners will be still further removed from production in shop or office.

Complicated organizational structures develop and bureaucracy tends to take hold. Staff functions are often required and complicated relationships develop between the staff and line. In addition vertical and horizontal relationships are built up.

Fayol[2] maintains that "trees do not grow right up into the sky" and corporate bodies have their limiting factors. For the tree it may be the insufficient climbing power of the sap, while for the company it may be insufficient climbing power of the sap, while for the company it may be insufficient

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[1] Richard N. Owens, Introduction to Business Policy, (Ill.: Richard D. Irwin, Inc., 1954).

[2] Henri Fayol, General and Industrial Management (N. Y.: Pitman Publishing Corp., 1949), page 58.

managerial capacity. But also a measure of the strength of the tree may come from its position in the forest. In the Bureau of Yards and Docks it would be the organization structure. The corporate body if likened to an animal has its reflex responses which take place without immediate intervention on the part of higher authority and without nervous or managerial activity the organism becomes one inert mass and quickly decays.

Dale[3] in his study on organization structure correlated the problems involved with the number of employees in the organization. It is reasonable to assume that the problems and missions of the Civil Engineer Corps have been greatly increased as the size of the Navy and the Corps increased. At the end of 1957 the CEC had approximately 835 regular officers on its rolls. The chart, table no. 1, page , gives the Regular-Reserve active duty count on 12 different dates in the 90 year history of the CEC.

Certain recognized authorities consider that organization has its main object coordination. Fayol considered that in every case the organization has to carry out the following managerial duties.

1. Insure plan is judiciously prepared and strictly carried out.
2. Human and material organization consistent with objectives.
3. Harmonize activities and coordinate efforts.
4. Set up a single competent energetic authority.
5. Formulate clear distinct and precise decisions.
6. Efficient selection.
7. Define duties clearly.
8. Encourage liking for initiative and responsibility.

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[3] Ernest Dale, Planning and Developing the Company Organization structure (N. Y.: American Management Association, 1952), page 22.

TABLE 2

CEC OFFICERS ON ACTIVE DUTY[4]

Date	Regular	Reserve
April 1867	7	0
May 1881	10	0
Oct. 1898	18	0
Aug. 1903	40	0
Nov. 1918	74	110
Jul. 1925	125	0
Sep. 1939	130	40
Mar. 1942	146	826
Feb. 1945	201	11,763
Jun. 1948	638	146
Jan. 1952	730	1,148
Dec. 1957	835	725

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[4] USN, CEC Bulletin (NAVDOCKS P-2, vol. 12, no. 2, Feb. 1958), page 15.

9. Fair and suitable recompense.
10. Sanctions vs. faults and errors.
11. Maintain discipline.
12. Subordinate individual interests to general.
13. Unity of command.
14. Supervise both material and human order.
15. Everything under control.
16. Fight against excess of regulations, red tape and paper control.[5]

Such is the mission of management by the personnel of the CEC. It was simpler when there were only 7 officers on duty in 1867. It has become more complex in keeping with the growth of the Bureau of Yards and Docks to a more important position of managerial responsibility and the related increase of the number of officer personnel.

ORGANIZATION

> Good men will produce results with mediocre or even poor organization, the human factor will triumph over well-nigh insuperable difficulties, but good men and poor ships are better than poor men and good ships. The ideal is good men with good ships. Able men in poor organization is analogous to driving a motor car with the brake set. With a good engine it can be done, but at a pitiful waste.[6]

Two general principles that are to be kept in mind are:

1. The organization structure of a command should be as simple as possible and the number of organizational units should be kept at a minimum.

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[5] Fayol, *op. cit.*, page 53.

[6] U. S. Naval Institute, *Naval Leadership with Some Hints to Junior Officers and Others*, (4th Edition), Annapolis, Maryland.

2. The organization structure should be sufficiently flexible to meet new and changing conditions.[7]

Assignment of necessary functions:

1. Every necessary function must be provided for within the command to insure accomplishment of its mission.

2. Every function of the command should be assigned to a specific organizational unit. Under normal circumstances, no single function should be assigned to more than one unit.

3. Functions that are closely related or similar normally should be assigned to a single organizational unit.

4. Responsibilities of two or more units that are inter-related should be clearly defined with respect to each unit, particularly as to action and review responsibilities.

5. There should be no overlapping, duplication, or conflict between organizational elements.

6. Functions should be assigned on such a basis as to minimize cross-relations between units.

7. Line functions should be separated from staff functions.

8. Functions should be assigned to promote balance, and avoid overemphasis of less important functions and underemphasis of more esssential functions.[8]

The chief executive job in every business except the very smallest cannot properly be organized as the job of one man. It must be the job of several men acting together. The kind of organization structure must consider the type of work that has to be performed. There are certain aspects which are so clearly co-related by virtue of type or time considerations that they obviously belong together. In addition the basic mission of the Bureau dictates the emphasis that will be given to various activities in the organiza-

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[7] USN Bureau of Naval Personnel, Organization Planning for Naval Units, NAVPERS 18371, August 1955.

[8] Ibid.

tional structure. The frequent question that arises is, "why change an organization"? The following points are pertinent to this matter:

1. Analysis needed most when organization has been going for sometime.

2. Especially when it has been doing well.

3. Important activities may be unprovided for or left hanging in the air.

4. Functions once important have lost most of their meaning, but continue to be organized as major activities.

5. Historically meaningful groupings no longer make sense, but are obstacles.

6. Discover unnecessary activities that should be eliminated.

Responsibility - not satisfaction - is the only thing that will serve. To perform, one has to be dissatisfied, to want to do better.

If a bureau is to act as an exponent of a management program it must be able to set itself up as an example. It cannot hope to encourage other bureaus to adopt certain systems and procedures if it has not demonstrated operational results at its own activities. Page is a graph showing the relative degree of implementation of the CMP at "Civil Engineer Navy" activities. The Bureau of Yards and Docks is faced with the embarrasing prospect of having to use other activities in demonstrating the operation of this program.

Actually the concept of the conceptual outlook is completely lacking in the management of BuDocks activities. There is no focal point within the Bureau which reflects on activity progress as a whole. Likewise there is no point that the field activities could deal with directly for problem consolidation. A common occurance is the development and agressive presentation by the Bureau of numerous projects and programs to the field without any indication of relative importance and priority. Although the output is consistent in

that it comes from the Bureau it lacks the uniformity of presentation that reflects a definite knowledge of the management capabilities of the field units and the overall demands made upon them. This is one area wherein BuDocks is required to exercise a line function. The staff relationship applicable to the rest of the Navy will not produce the desired results for CEN activities.

"Piece meal" management does not really manage at all. The management responsibilities of the Bureau should not become a secondary consideration in relation to the technical aspects. An integrated management program requires the pulling together of all the decision making aspects of management. It is not logical to develop a consolidated management index without the organizational capabilities of utilizing it. It is true that in the past, the staff role of the Bureau of Yards and Docks has far overwhelmed the management feature. The picture has changed. The principal changes have been due to:

a. Decrease in war time construction role.

b. Increased emphasis on management programs.

c. Increased role of Public Works Centers in BuDocks sphere of management.

A study of this general problem was made by the Bureau in 1955.[9] At that time the idea of establishing a focal point of contact with which the various field activities could deal directly with an all or a major portion of their problems was not approved. Apparently the major disadvantages cited were:

1. Duplication of effort.

2. Personnel duplication.

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[9] USN, Bureau of Yards and Docks, A Study of the Problem of Establishing a Focal Point of Control in BuDocks to Exercise Management Over its Field Activities, (Mgt. Engr. Branch, 22 Aug. 1955).

3. Conflicting lines of authority and responsibility.
4. Slowing down of communications to the technical components.
5. The management role was not as important as the staff role.
6. The present system permits higher personnel grades.

All of the aforementioned points miss the paramount issue that the Bureau of Yards and Docks is not performing an adequate management function for the CEN activities. It is like saying "don't paint that wall you will get paint on the paint brush." Actually it is recognized that the staff role of the Bureau will always be the predominant one. It is not suggested that the entire Bureau be reorganized and that the functional concept be abandoned. It is recommended, however, that a management unit be established for CEN activities. Instead of a duplication of effort it can provide for a uniformity of administration and a centralization of management controls. The centralization of effort need not mean duplication of personnel, and conflicting line of authority and responsibility. What is required is rooting out of excess personnel from the various niches and corners when it is determined that the real justification for their position is the management support of the CEN activities. It will be necessary to transfer some personnel and to adopt a staff and line concept within the BuDocks organization in so far as administration of CEN activities is concerned. In this concept the CEN division would be the line.

No effort will be made to outline the specific type of organization required but the author envisages an Assistant Chief of Bureau for CEN Field Activities. Specific delineation of the structure required should be the result of an independent and detailed study.

CHAPTER IX

FACILITY CONDITION RATING

All control, including that associated with facilities management, involves the setting of a standard and the measurement of performance against this standard. When there is a variance between a standard and actual performance, a first question is whether this variance is significant. The next question is usually, what went wrong with performance? Unfortunately a significant question that is appropriate at the present time is "what is wrong with the standard"? Effective facilities management control may reveal poor execution of job orders or indicate when estimating needs improvement. It does not, however, always reveal the reasons for poor execution. For example, poor execution may result from a number of factors:

1. Ignorance or misunderstanding of job objective.
2. Inherent organizational inability to perform tasks even when they are understood.
3. Intentional failure to perform.
    a. Resentment.
    b. Discontent.
    c. Personal jealousies.

The above reasons are not readily determined from control records.

The limitation of control records accentuates the need for personal observation in any effective management role. There is a great deal of criticism emunating from the field, at the present time, on this matter of inspections. I do not believe the value of the Bureau's contact with the field is

questioned. It is rather the uncoordinated nature of the visits. It is pertinent to observe the programs that have the greatest drive and field support behind them. They are those in which there has been close contact with the Bureau Division concerned. It is always personal assistance which is called into play in the Bureau of Yards and Docks when statistical controls have failed to point to corrective areas. This is due to the very nature of our organization, method and systems. The higher management echelon in the Bureau often finds itself insulated in differint ways from the problems of lower management levels in the field.

There must exist for any management program a "Moment of Truth". In an integrated facilities management program this point arrives in considering the actual condition of the facilities involved. Ratios or indices can vary and vacillate depending on many influences other than deterioration. The adequacy or inadequacy of workmanship requires an on-site observation.

It is considered therefore that a vital part of the integrated program is the development of an annual on-site condition of facilities rating for class I and II property. N. M. Schacter of the Navy Management Office proposed a facility condition rating system for class II property that is worthy of consideration. The main steps briefly are as follows:

> 1. Develop a simple numerical condition-rating scale.
>
> 2. List major features to be rated and their relative importance, on the basis of estimated percentages of total maintenance expenditures or any other suitable criterion.
>
> 3. Have an objective authority annually inspect each facility and rate each major feature. Then, using the percentages referred to in the preceding paragraph as weighting factors, compute a rating for the building as a whole.
>
> 4. Finally, combine the ratings for all facilities into an overall rating, using plant replacement values as weighting factors.[1]

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[1] N. M. Schacter, A Proposed System for the Evaluation of Controlled Maintenance in the Shore Establishment, (Wash.: USN Management Office, 20 June 56), page 13.

Pages 82 and 83 illustrate the application of the facility rating system.

The Facility Condition Rating has a direct relationship to three distinct factors:

1. The deferred maintenance backlog.
    a. Specific projects and estimated costs for which additional funds are required.

2. The percent of productive hours of work force spent on emergencies.

3. The shops backlog of work.
    a. Project or job orders planned for, but not yet accomplished by shop forces.

The deferred maintenance backlog is an outgrowth of the continuous inspection phase of the controlled maintenance program. Theoretically the facility condition ratings should represent a numerical condition rating of the deficiencies contained in the deferred maintenance backlog and a portion of the shops backlog of work.

The deferred maintenance backlog also represents the Special Project[2] (nonrecurring maintenance) requests. It appears that any decision relative to financing special projects or allocating funds for normal maintenance and operation should consider the condition of the facilities. If an activity is over-maintaining it suggests a reduction in funds. It would not be consistent to support certain special project requests when at the same time the shop work load indicates that the job could be performed by station forces.

Another point of interest is the percent of productive hours spent on alterations and improvements. If this figure is abnormally high (recommended range 8-12%) it indicates that an excessive amount of maintenance funds are

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[2] USN, Bureau of Yards and Docks, Policies and Procedures Governing the Submission of CEN Repair Projects, BuDocks Instruction 11000.4B, 10 Feb. 1956.

Table 4

ON SITE FACILITY-CONDITION-RATINGS FOR BUILDINGS

A. Rating Scale

Over-maintained	+ 1
Adequately maintained	0
Inadequately maintained	- 1

B. Features rated and relative importance in computing over-all rating for a building:

1.	Structural	34%
2.	Flooring	9
3.	Exterior painting	12
4.	Interior painting	11
5.	Roofing	10
6.	Plumbing	11
7.	Electrical	10
8.	Installed equipment	3
		100%

Note: Above figures represent estimated percentages of total building maintenance (based on Army experience).

C. Worksheet for computing the facility-condition-rating for a building as a whole

Feature	Weighting Factor	Facility-Condition-Rating	Weighted Total (b x c)
a	b	c	d
1. Structural	.34		
2. Flooring	.09		
3. Exterior painting	.12		
4. Interior painting	.11		
5. Roofing	.10		
6. Plumbing	.11		
7. Electrical	.10		
8. Installed equipment	.03		
Over-all facility-condition-rating			

--Filled-in Example--

Feature	Weighting Factor	Facility-Condition-Rating	Weighted Total (b x c)
a	b	c	d
1. Structural	.34	0	0
2. Flooring	.09	0	0
3. Exterior painting	.12	+ 1	+ .12
4. Interior painting	.11	+ 1	+ .11
5. Roofing	.10	- 1	- .10
6. Plumbing	.11	- 1	- .11
7. Electrical	.10	- 1	- .10
8. Installed equipment	.03	0	0
Over-all facility-condition-rating			- .08

ON SITE FACILITY-CONDITION-RATINGS FOR BUILDINGS

(Concluded)

D. **Worksheet for computing the over-all facility-condition-rating for all buildings combined:**

Building No.	Facility-Condition-Rating	Replacement Value (thous. $)	Weighted Total (b x c)
a	b	c	d
Total	*		

* Computed by dividing total of col. d by total of col. c

--Filled-in Example--

Building No.	Facility-Condition-Rating	Replacement Value (thous. $)	Weighted Total (b x c)
a	b	c	d
1	− .08	$ 80	− 6.40
2	− .21	60	− 12.60
3	0	20	0
4	+ .11	75	+ 8.25
5	+ .23	100	+ 23.00
78	+ .23	15	+ 3.45
79	+ .57	35	+ 19.95
80	0	42	0
81	0	60	0
82	− .34	72	− 24.48
83	− .32	62	− 19.84
84	− .10	18	− 1.80
Total	− .20 *	$ 4,200	− 847.28

* Computed by dividing total of col. d (here, −847.28) by total of col. c (here, $4,200).

being siphoned off.

The emphasis in the Schacter study had been on buildings. There is no reason why the same concept cannot be applied to utilities maintenance and operation. The day to day operating results and maintenance deficiencies in the utility field should come from the close coordination of the utility operators and the continuous inspection phase of the controlled maintenance program. Actually the annual on-site condition inspection of utilities should be in the form of a utilities conservation survey.[3] The results of this study should be correlated specifically to operating costs. If an improvement in operating methods and procedures, or a change in equipment, etc. will achieve a saving in operating costs then this data should be a fundamental part of the budgetary procedure. Under the existing conditions the Bureau of Yards and Docks is claiming tremendous savings in utility operation by virtue of the utilities conservation program. Unfortunately these are "theoretical paper savings". They will be achieved _if_ certain action is taken by the local commands and the management bureaus. The budgetary and financial program for an activity should be reviewed with due consideration of the utility conservation survey recommendations in so far as they apply to utility operation costs. Presently an activity can continue in the mismanagement of utilities operation. As long as they still requested about the same amount for utilities year after year the budget would be approved as being "in line".

The Department of Defense has taken a broader view on the problems in this general area intended to help answer questions such as:

> 1. With regard to a given type of facility and under specific circumstances, would it be more efficient to build permanent, semi-perma-

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[3] Dept. of Navy, Bureau of Yards and Docks, _Utilities Conservation Program Survey Guide_, (Washington, D. C., 24 April 1957).

nent or temporary structures?

2. Are our maintenance efforts being applied in the right area, at the right time and in the right amount?

The answers to these questions require a continuous analysis of maintenance repair levels on the basis of the various types of physical property as defined and grouped in the inventory categories. Obtaining an answer to the "level of maintenance being maintained" question alone, would to some extent indicate the effectiveness of the handling of real property. Much of the information gained in the analysis of maintenance repair levels (when coupled with the certain monetary evaluations) could contribute immeasurably to decisions in both the construction and disposal areas. . . .

. . . . One notable gap in the total picture - i.e. consideration of the extent of the rise or fall in the maintenance level of each category of property.

Thus we can see that it would be necessary to devise a method of physical condition reporting or auditing to provide such information by type of property and type of construction. Preferably this reporting would revolve around three elements:

1. A base permanency index. - A numerical percentage to indicate the relative base permanency of each base on the latest 10 year plan, in view of the current and long-range possibilities of use of the base as an operating location.

2. A suitability index. - Also a numerical index, representing a relative designation with regard to the average of a given type of facility, such as temporary family housing, as to its ability as a type to serve the immediate use for which it is intended on that particular base.

3. A condition index. - A relative percentage designation of the average condition of the base property (by category) regardless of its suitability.

Data assembled on the basis of these three elements would then provide the information required for completing the picture, so that in combination we would have (by inventory category and type of construction):

1. Maintenance and repair costs during the period.

2. Property cost.

3. The indices of
    a. Base permanency
    b. suitability
    c. condition.

> . . . . The maintenance and repair costs during the period by inventory category could be supplied through the "maintenance area" accounts developed pursuant to DOD Instruction 4165.9. . . .
>
> . . . . The base permanency would come from the departmental installations operations planning groups as approved by Chiefs of Staff. The suitability and condition indices would be obtained by physical inspection of the facilities of the individual bases. On a bi-annual cycle, the physical evaluation inspection cost should not exceed 1/1500 of the amount which is expended for installation maintenance during that period (excluding construction).[4]

The only way that a practical facilities condition rating system can be developed is by trial, application and refinement in the field. The Bureau of Yards and Docks should formally begin this aspect of the program without delay. The initial step would be a letter to all management Bureaus advising them of the general details and requesting cooperation in a period of field development. It is considered that the Facilities Branch of the Maintenance Division of the District Public Works Organization would spearhead the field work.

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[4] John F. Snyder, "A system for Evaluation of Overall Effectiveness of Real Property Maintenance Management Within the Military Establishment", The Armed Forces Comptroller, vol. III, no. 1, (March 1958), pp. 20-21.

CHAPTER X

PROGRAM SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In summarizing the concept of an integrated facilities management program as developed by this study it may be of assistance to utilize a flow chart.[1] A complete and adequate inventory of class I and II property with a standardization of nomenclature is the foundation of the program.[2] This inventory constitutes the facilities to be managed. From time to time an input of additional inventory items or facilities is provided thru the mechanism of the Military Construction Program.

The application of sound industrial management principles in the day to day operation of the activity facilities is next achieved by the Controlled Maintenance Program. This program provides:

1. Charges against applicable expenditure accounts.
2. Development of Facility History Record Cards.
3. Management reports (#1,2,3) and a
4. Deferred maintenance list.

The charges against the expenditure accounts provide the official cost accounting data as required by the Navy Comptroller. The development of unit cost data from these accounts will be accomplished by the Bureau of Yards and

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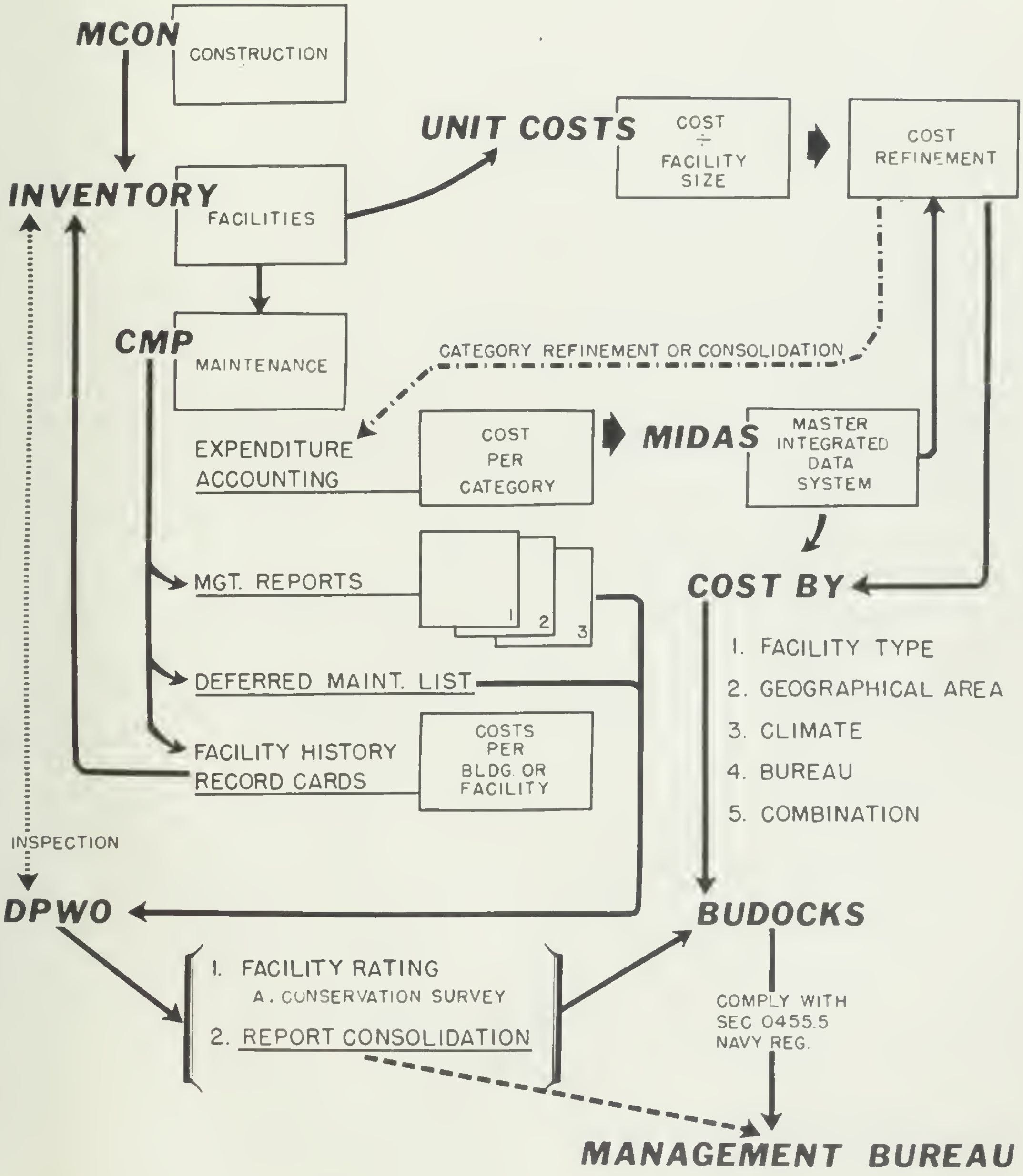
[1] Refer to chart page 86.

[2] Refer to page 52.

INTEGRATED MANAGEMENT PROGRAM



Docks through a master integrated data analysis system[3] which will speed up the data collection transmission and processing cycle by the use of electrical communicators and EDPM techniques. BuDocks by this process will be able to accumulate cost data by:

1. Types of facilities.
2. Geographical areas.
3. Climatology factors.
4. Management Bureaus.
5. Combinations of above.

This information will be supplied to the various other Navy Bureaus for use in the management of their programs. A refinement of the data will be provided by the activity facility history record cards, since a correlation of these cards with the applicable inventory item record will also provide unit cost data.

The management reporting phase of the controlled maintenance program will produce information relative to work input control, performance indices and the shop backlog of work. It will also reveal the deferred maintenance list which is the background for special project requests to the management bureau. This management data will be consolidated by the District Public Works Office (management report #4)[4] and supplemented by a facility rating and utility conservation report based on inspections made by the District Public Works Office.

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[3] USN, Bureau of Yards and Docks, A Feasibility Study on Automatic Data on Automatic Data Processing, MIDAS.

[4] BuDocks instruction 11014.21, 14 March 1958.

The Bureau of Yards and Docks upon receipt of:

1. The consolidated management report.
2. The deferred maintenance list.
3. The facility rating and utilities conservation report

will integrate this data with the unit costs promulgated by the inventory/expenditure account/facility history card complex. The Bureau of Yards and Docks will now be in a position to comply with Navy regulations[5] concerning the assumption of responsibility for estimating public works maintenance funds required and the submission of recommendations to the responsible management Bureau and office.

CONCLUSIONS AND RECOMMENDATIONS

Throughout the development of this thesis a determined effort has been made to emphasize the view that the use of modern industrial engineering, accounting and financial controls are not an end in themselves. They are not a substitute for management. They can be a definite aid in fulfilling the mission of the Civil Engineers Corps and the Bureau of Yards and Docks.

There is no one perfect way to accomplish the recommendations of this report. The author has been acutely aware of the fact that he cannot hand BuDocks a completed system in detail and ready for installation. It is hoped that a sound structural framework has been outlined. The responsibility rests with others to determine which specific efforts will develop a management program within this framework.

If the Bureau is to pursue the development of an integrated facilities

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[5] U. S.,, USN Regulations, (Washington: U. S. Government Printing Office, 1948), p. 51.

management program the presentation must be developed with the utmost tact especially with the other Management Bureaus. The outcome would be based not on insistance but rather on an attitude of perserverence and the ability to select the proper time, and the most favorable circumstances to pursue the matter. There is every reason to believe that the present climate could not be much more propitious. It is vital to the program, however, that the CEN activities lead the way. If we do not believe in our own programs we cannot hope to sell them to others.

The philosophy for dynamic management requires the continuous development of personnel which will keep the concept alive. It is therefore recoommended that:

1. The matter of management ability be specifically and formally established as a prime requisite for CEC officers to be considered for advancement to top rank and to jobs of critical responsibility.

2. A competent and detailed survey be made of those CEC assignments in the Navy, which are classified as most important from the management standpoint.
(While it is true that the importance of many duty stations are obvious such as the DPWO's, Public Works Center C. O., etc., there remains a vast number of jobs whose rank structure and considered importance in no way reflects the actual conditions involved).

3. That there be provided in the BuDocks, District Public Works Office's and DIRPAC and DIRLANT organizations effective coordinating management units to insure that the conceptual outlook for management improvement is actively prosecuted.

4. A Bureau, on the job, (as differentiated from and supplementing formal University Graduate Training) management training program be formalized at all management levels in order to achieve greater efficiency and economy.

5. A balanced, agressive career program be formally developed for CEC officers based upon modern management techniques.

6. Management improvement programs be made in integral part of financial management and the sum total to constitute a primary tool for executive decisions. - Let management manage not accountants.

The beginning chapter of this paper was titled "The Challenge". It is only fitting that the cycle be completed by again taking upaa challenge. In this instance it is addressed to the Chief of the Bureau of Yards and Docks. In the last analysis it is in that position that is vested the tremendous responsibility for achieving the advances required for the future role of the Corps. The challenge is based on a widening dimension in Civil Engineering Corps activities requiring constructive leadership in the social, economic and political areas. There exists a growing urgency for action now. An increasing complexity in operations requires a broader management capacity.

> The manager of tomorrow will not be able to remain an intuitive manager. He will have to master system and method, will have to conceive patterns and synthesize elements into wholes, will have to formulate general concepts, and to apply general principles. Otherwise he will fail. In small business and in large, in general management and in functional management, a manager will have to be equipped for the practice of management.[6]

The objectives of the Bureau of Yards and Docks require the establishment of specific and up to date targets. The most sensitive areas of responsibility are:

a) Educating juniors for management.

b) Improving communication.

c) Assuming Navy wide obligations.
    (1) Creating a demand for our wares.
    (2) Being aware that complacency or resistance to change can rob us of the many advantages being offered by scientific and technological development.
    (3) Eliminating a climate of non-progressive conformity.

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[6] Peter Drucker, loc. cit., p. 353.

Finally recognition of a good job is the stimulus that keeps the organizational pulse at a rapid rate. The author suggests two annual Chief's Management Awards:

1. To the Commanding Officer of the CEN activity who has done the best management job.

2. To the CEC officer who has written the best paper on a management aspect of interest to the Navy.

APPENDIX

INFORMATION REQUIRED IN JUSTIFICATION OF PROJECTS FOR MAJOR NON-RECURRING MAINTENANCE

Each major non-recurring maintenance project shall be submitted on NAVDOCKS Form 167, and shall include specific data on the following items, where applicable:

a. Project Title and Estimated Cost. Careful wording of project title is important. In many cases reviewing agencies, particularly those dealing with appropriation of funds, have rejected projects due to misconception arising from improperly worded titles.

b. Purpose of Project. Aim or intent. What will be accomplished by the proposed project?

c. Description of Project. Include, when applicable, a schematic plan, site location, and related distances from other structures. Wherever applicable standard 8" x 10" photographs substantiating and amplifying the project request shall be forwarded.

d. Justification. Replied to the following items will constitute the basis of requirements and should be answered as fully as possible:

(1) Cause of deterioration, damage or deficiency which led to the initiation of the project request.

(2) Indicate expected adverse or undesirable conditions which will result if the project request is not approved.

(3) Recommended governing standards and specifications (brief) for the repair or replacement. Does the proposed project comply with existing BUDOCKS design criteria and other controlling standards? If not, justify.

(4) When was last similar work performed?

(5) What is being done to minimize or eliminate similar work in the future?

(6) Recommended method of accomplishment, including recommendations concerning the preparation of plans and specifications as well as field execution. Indicate whether work will be accomplished by NOy contract, station

labor or both (indicate percentage).

(7) Breakdown of estimated cost, indicating (a) contractual engineering services, if requested, (b) material, (c) labor, (d) equipment, (e) other costs (including indirect, profit, contingency, etc.,) as appropriate. Indicate also quantities involved and unit costs in sufficient detail for review.

(8) In addition to total estimated cost of entire project, indicate estimated cost of portions for accomplishment in increments in the event funds cannot be made available at one time for the entire project.

(9) Possible alternative, in lesser scope or amounts (in the event sufficient labor, materials, facilities, or funds are not available).

(10) Net annual savings in dollars to be attained or greater number of hours of associated facilities use to be gained.

(11) Advantage, if any, of immediate action or the estimated cost if the action is deferred.

(12) For yard labor projects, indicate labor breakdown in man-hours for each category and trade. Indicate also whether an increase in yard labor force will be required. Indicate also the preferred schedule for accomplishing the project including the starting and completion dates.

(13) Estimated time of completion after receipt of funds.

(14) Previous action. Indicate whether project has been previously submitted and whether incremental allotments have been issued.

...ining Facilities other than buildings

Description

The pay of civilian labor and the cost of supplies and services used in the maintenance and care of land and structures, other than buildings, used for training of military personnel.

Detail Account Number		Navy Inventory Code
	- Aircraft Gunnery Ranges -	17910
	- Bombing and Rocket Ranges -	17920
	- Projectile ranges	17930
	- Small Arms Ranges	17940
	- Training or obstacle Courses	17950
	- Parade & drill fields	17900
	- other training facilities	17990

OK

P. 98.

Training Buildings

Description

The pay of Civilian labor and the Cost of supplies and Services used in the maintenance of buildings in which applied, academic and general instruction is given or military training accomplished.

Detail Account Number		Navy Inventory Code
	- Academic + General Instr. Bldg. - Permanent	17110
	- Academic + General Instr. Bldg - Temporary	
	- Applied Instruction Bldgs - Permanent	17120
	- Applied Instruction Bldgs - Temporary	
	- Armories - Permanent	17130
	- Armories - Temporary	
	- Drill Halls - Permanent	17140
	- Drill Halls - Temporary	
	- Other Training Bldgs - Permanent	17190
	- Other Training Bldgs - Temporary	

OK

Comments: Committee feels that 11011.27 should distinguish between Armories and Drill Halls by definition. If no distinction exists revise 11011.27

4/4/58

Maintenance Dredging.

Description

The pay of Civilian labor and the Cost of supplies and Services used in maintenance dredging of harbors and Channels. Exclude: (1) Dredging to provide fill and (2) Dredging directly related to the specific Construction of an item or facility.

Detail Account Number		Navy Inventory Code
—	Maintenance Dredging	.16510

4/4/58

Marine Improvements

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of facilities and structures to protect the harbor or coast from current or wave action

Detail Account Number		Navy Inventory Code
-	Breakwaters	16410
-	Groins and Jetties	16420
-	Levees	16430
-	other marine improvements	16490

4/4/58

Moorings)

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of permanent-type off-shore facilities for the securing of vessels. Exclude: the maintenance of waterfront (on-shore) facilities used for mooring or berthing.

Detail Account Number		Navy Inventory Code
-	Mooring Dolphins	16310
-	Mooring Platforms	16320
-	Stake Pile Moorings	16330
-	other off-shore Moorings	16390

4/4/58

Coastal Protection Facilities

Description

The pay of civilian labor and the cost of supplies and services used in the maintenance of facilities used for the protection of the Coastline against military action

Detail Account Number		Navy Inventory Code
-	Fixed gun emplacements	16710
-	other coastal protection facilities	16790

4458

Harbor Protection Facilities

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of facilities used for the protection of harbors against military attack.

Detail Account Number		Navy Inventory Code
-	Harbor Entrance Control Post	16110
-	Fixed nets anchorage	16120
-	Winch house	16130
-	Other Harbor Protection facilities	16190

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44158

Other waterfront operational facilities

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of Aircraft Docking facilities, Degaussing and Deperming facilities, Fleet landings, Ferry slips, small craft berthing facilities and other waterfront operational facilities not otherwise Classified under accounts ______

Detail Account Number		Navy Inventory Code
	- Aircraft Docking Facility	15910
	- Degaussing Facility	15920
	- Deperming Facility	15930
	- Fleet Landings	15940
	- Ferry slip	15950
	- Small Craft Berthing	15960
	- Miscellaneous Waterfront operational facilities	15990

4/2/58

Seawalls, Bulkheads and Quaywalls

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of these structures defined in NavDocks TP-Pw-8

Detail Account Number		Navy Inventory Code
-	Bulkheads	15410
-	Quaywalls	15420
-	Seawalls	15430

Comment:

No accounts established for Navy inventory Code 15490. The Basic Category is limited to Seawalls, Bulkheads And Quaywalls. Navy Code 15490 is therefore meaningless.

4/4/58

Cargo Handling Facilities

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of open areas that are located adjacent to waterfront loading facilities and are used for the handling Classifying and staging of Cargo

Detail Account Number		Navy Inventory Code
	- Cargo handling facility	15310

4/4/58

Wharves)

Description

The pay of civilian labor and the cost of supplies and services used in the maintenance of wharves (as defined in NavDocks TP-Pw-8), including fender protective systems, on-wharf trackage and on-wharf utility systems. Exclude: (1) Marine fuel dispensing facilities covered by accounts ________, (2) transit sheds on wharf, (3) fixed crane structures and (4) all structures and facilities landward of the inboard side of the wharf.

Detail Account Number	Navy Inventory Code
- Ammunition wharf	15210
- Berthing wharf	15220
- Fitting out wharf	15230
- Fueling wharf	15240
- Repair wharf	15250
- Supply wharf	15260
- other wharves	15290

Piers

4/4/58

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of piers (as defined in NAVDocks T.P-PW-8), including protective dolphins, on-pier trackage and on-pier utility systems. Exclude: (1) Marine fuel dispensing facilities covered by accounts ________, (2) transit sheds on pier, (3) fixed crane structures and (4) all structures and facilities landward of the inboard end of the pier.

Detail Account Number		Navy Inventory Code
	- Ammunition Pier	15110
	- Berthing Pier	15120
	- Fitting Out Pier	15130
	- Fueling Pier	15140
	- Repair Pier	15150
	- Supply Pier	15160
	- Other Piers	15190

44/58

and operational facilities other than Buildings

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of facilities other than buildings in which or from which tactical and organizational type operations are performed or are simulated for practice. Include under account ..... fuel launching facilities for Guided Missiles.

Detail Account Number		Navy Inventory Code
-	aircraft revetments	14910
-	aircraft Catapult	14920
-	aircraft arresting gear	14930
-	LTA mooring	14940
-	other land operational structures	14990

4/4/58

Helium Plants and Storage facilities

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of facilities used for the receipt, storage, processing and dispensing of Helium gas, including tanks, pipes, valves, valve Chambers and similar appurtenant equipment

Detail Account Number		Navy Inventory Code
	- Helium processing plant	14210
	- Helium storage facility	14220
	- Dispensing and other helium facilities	14290

Comment;

Committee feels that one account would suffice instead of the three provided that the Quantity of these facilities in the Navy are few based upon a tabulation of Inventory data

3/28/56

Land Operational Buildings

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of buildings housing operational activities and equipment. Exclude: (1) Buildings used for research, development and testing and (2) Waterfront operational facilities

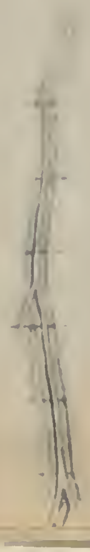
Detail Account Number		Navy Inventory Code
	- Air Terminal Bldg. - Permanent	14110
	- Air Terminal Bldg. - Temporary	
	- Aircraft Fire and Crash Stations - Permanent	14120
	- Aircraft Fire and Crash stations - Temporary	
	- Aircraft Line Operations Bldg. - Permanent	14130
	- Aircraft Line operations Bldg. - Temporary	
	- Aircraft Operations Bldg. - Permanent	14140
	- Aircraft Operations Bldg - Temporary	
	- LTA hangars - Permanent	14150
	- LTA hangars - temporary	
	- Photographic buildings - Permanent	14160
	- Photographic buildings - Temporary	
	- Separate Control Tower Bldg. - Permanent	14170
	- Separate Control Tower Bldg. - Temporary	

141 (Cont'd) =

31/8/58

Land Operational Buildings (Cont'd).

Detail Account Number		Navy Inventory Code
	- Transfer Depot for Explosives - Permanent	14180
	- Transfer Depot for Explosives - Temporary	
	- Other land operational Bldgs - Permanent	14190
	- Other land operational Bldgs - Temporary	



3/28/56

irfield Pavement Lighting

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of lighting systems for airfield pavements. Exclude: 1) Airfield Perimeter lighting, (2) Street Lighting and (3) other general illumination.

Detail Account Number		Navy Inventory Code
-	Approach lighting	13610
-	Parking and Service Area Lighting	13620
-	Runway lighting	13630
-	Seadrome lighting	13640
-	Taxiway lighting	13650
-	Other Airfield pavement lighting	13690

3/25/58

Communication lines

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of all Cables and open wire lines used in the Communications system.

Detail Account Number	Navy Inventory Code
- Communication lines	13510

Comment:

No account established for Inventory Code 13590. The Committee feels that "Communication lines" is a limiting term and any additional account would be meaningless.

3/28/58

gation and Traffic Aids facilities other than buildings

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of structures other than buildings which provide navigation and traffic aids to ships and aircraft.

Detail Account Number		Navy Inventory Code
	Antenna system for Nav. & Traffic Aid	13410
	Aircraft Beacon	13420
	Ship Beacon	13430
	Ground Control Approach system	13440
	Separate aircraft obstruction lighting structures	13450
	Optical landing systems	13460
	Other structures for Navigation and Traffic Aid	13490

3/28/58

Navigation and Traffic Aids Buildings

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of buildings housing equipment and facilities for sea and air traffic Control

Detail Account Number		Navy Inventory Code.
	- Aerological Bldg. - Permanent	13310
	- Aerological Bldg. - Temporary	
	- Light House - Permanent	13320
	- Light House - Temporary	
	- Loran Bldg. - Permanent	13330
	- Loran Bldg. - Temporary	
	- Port Control office - Permanent	13340
	- Port Control office - Temporary	
	- Radio range Bldg. - Permanent	13350
	- Radio range Bldg - Temporary	
	- Sonar Bldg. - Permanent	13360
	- Sonar Bldg. - Temporary	
	- Radar Bldg. - Permanent	133
	- Radar Bldg - Temporary	
	- Other Nav. + Traffic Aids Bldgs. - Permanent	133
	- Other Nav. + Traffic Aids Bldgs. - Temporary	

3/28/58

Communication facilities other than Buildings or Lines

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of these facilities. Exclude: (1) Building maintenance and (2) maintenance of Communication lines.

Detail Account Number		Navy Inventory Code
-	Antenna - tower supported	13210
-	Antenna - Vertical radiator	13220
-	Antenna - Pole and Wire	13230
-	Switching stations - outdoor antenna	13240
-	Outdoor Public address system	13250
-	Other Communication facilities	13290

3120.1

mmunications Buildings

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of buildings housing equipment and facilities for Communications:

Detail Account Number		Navy Inventory Code
	- Cable House - Permanent	13110
	- Cable House - Temporary	
	- Communications Center - Permanent	13115
	- Communications Center - Temporary	
	- Communications Control Link Bldg - Permanent	13120
	- Communications Control Link Bldg - Temporary	
	- Direction Finder Bldg. - Permanent	13125
	- Direction Finder Bldg - Temporary	
	- Helix house - Permanent	13130
	- Helix House - Temporary	
	- Receiver Bldg. - Permanent	13135
	- Receiver Bldg - Temporary	
	- Telephone Exchange Bldg. - Permanent	13140
	- Telephone Exchange Bldg - Temporary	
	- Terminal Equipment Bldg. - Permanent	13145
	- Terminal Equipment Bldg - Temporary	

unications Buildings (Cont'd)

Detail Account Numbers		Navy Inventory Code
	- Transmitter Bldg. - Permanent	13150
	- Transmitter Bldg. - Temporary	
	- Other Communications Bldgs - Permanent	13190
	- Other Communications Bldgs - Temporary	

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3/12/55

Other liquid fuel dispensing facilities

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of liquid fueling facilities other than those covered by accounts ________, including valves, meters pumps and appurtenances to control pressure and flow to the service outlet. This account includes the loading and dispensing facilities for Bulk fuel storage. Exclude: (1) storage tanks and (2) pipeline to dispensing facility.

Detail Account Number		Navy Inventory Code
	- Drum and Can loading facilities -	12610
	- Propellant fueling facilities -	12620
	- Tank truck loading facilities -	12630
	- Tank Car loading facilities -	12640
	- Miscellaneous fueling and Dispensing facilities -	12690

3/29/58

02 Pipeline and Appurtenances

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of fuel oil, aviation gas and other liquid fuel distribution systems, including pipelines and accessory equipment such as valves and pumping stations for the Control of pressure and flow. Bulk fuel pipelines refer to those lines which are a part of the Bulk fuel storage system defined under account ______.

Detail Account Number		Navy Inventory Code
	- Above ground Bulk fuel pipeline	12510
	- Underground Bulk fuel pipeline	12520
	- Aboveground non-bulk fuel pipeline	12530
	- Underground non-bulk fuel pipeline	12540
	- Above ground pumping stations	12550
	- Under ground pumping stations	12560

omment! No account established for Inventory Code 12590. The Committee feels that all items of Cost are Covered in the six accounts established.

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3/21/58

erating Fuel Storage

Description

The pay of Civilian labor and the Cost of supplies and Services used in the maintenance of tanks used for immediate back-up storage for dispensing facilities. Exclude: (1) Pipeline to the dispensing facility and (2) tanks used for depot, terminal and bulk-type storage.

Detail Account Number		Navy Inventory Code
	- Tank Car Ready Fuel Storage Tanks	12410
	- Drum and Can Ready Fuel Storage Tanks	12420
	- Aircraft Ready Fuel Storage Tanks	12430
	- Marine Ready Fuel Storage Tanks	12440
	- Vehicle Ready Fuel Storage Tanks	12450
	- Ballast and Sludge Storage Tanks	12460
	- Surge storage tanks	12470
	- Propellant Storage Tanks	12480
	- other immediate back-up storage tanks	12490

3/21/58

2 Vehicle Fuel Dispensing facilities

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of operational facilities for fueling official land vehicles and equipment, including valves, meters, pumps and appurtenances to control pressure and flow to the service outlet. Exclude: (1) back up storage tanks, (2) pipeline to dispensing facility and (3) private vehicle dispensing facilities.

Detail Account Number		Navy Inventory Code
	- Filling Station	12310
	- other fueling facilities	12390

3/21/58

rine Fuel Dispensing Facilities

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of operational facilities for fueling ships and boats, including valves, meters, pumps and appurtenances to Control pressure and flow to the service outlet. Exclude: (1) Back up storage tanks and (2) pipeline to dispensing facility

Detail Account Number		Navy Inventory Code
	- Ship fueling facility	12210
	- Small Craft fueling facility	12220
	- other marine fueling facility	12290

3/21/58

ircraft Fuel Dispensing Facilities

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of operational facilities for fueling aircraft, including valves, meters, pumps and appurtenances to control pressure and flow to the service outlet. Exclude (1) back up storage tanks and (2) pipeline to dispensing facility

Detail Account Number		Navy Inventory Code
-	- Aircraft Direct Fueling Stations	12110
	- Aircraft truck fueling station	12120
	- other aircraft fueling facilities	12190

3/21/58

rfaced Pavements - other
)

Description

The pay of civilian labor and the cost of supplies and services used in the maintenance of the below listed facilities. Exclude: Cleaning and snow removal operations

Detail Account Number		Navy Inventory Code
-	Aircraft Washrack Pavement	11610
-	Aircraft Compass Calibration Pad	11620
-	Seaplane Ramp	11630
-	Miscellaneous pavements	11690

ment: Committee felt that breakdown by material type was not necessary under assumption that types of pavement covered here are for the most part of Concrete material.

3/28/58

Airfield Pavements - Aprons

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of these facilities. Exclude: Cleaning and snow removal operations.

Detail Account Number		Navy Inventory Code
	- Concrete Seaplane Parking Aprons	11310
	- Bituminous Seaplane Parking Aprons	
	- other Surfaced Seaplane Parking Aprons	
	- Concrete Aircraft Parking Aprons	11320
	- Bituminous Aircraft Parking Aprons	
	- other surfaced Aircraft Parking Aprons	
	- Concrete aircraft maintenance aprons	11330
	- Bituminous aircraft Maintenance aprons	
	- other surfaced aircraft Maintenance Aprons	
	- Concrete aircraft access aprons	11340
	- Bituminous aircraft access aprons	
	- other surfaced aircraft access aprons	
	- Concrete aircraft operational aprons	11350
	- Bituminous aircraft operational aprons	
	- other surfaced aircraft operational aprons	
	- other Concrete airfield aprons	11390
	- other Bituminous airfield aprons	
	- other airfield paved aprons.	

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Paved Pavements – Taxiways

Description

The pay of civilian labor and the cost of supplies and services used in the maintenance of pavement used for the taxiing of aircraft. Exclude: Cleaning and snow removal operations.

Detail Account Number		Navy Inventory Code
	- Concrete taxiways	11210
	- Bituminous taxiways	
	- other surfaced taxiways	
	-	
	-	

field Pavements - Runways, Landing and Take-off Pads

Description

The pay of Civilian labor and the cost of supplies and Services used in the maintenance of these facilities. Exclude: (1) Maintenance of taxiways, aprons and other airfield pavements not Classified as runways, landing or take-off pads and (2) Clearing and snow removal operations and (3) Guided Missile take off pads (See account # ________)

Detail Account Number		Navy Inventory Code
	- Concrete Runways	
	- Bituminous Runways	11110
	- other surfaced Runways	
	- Concrete helicopter landing pads	
	- Bituminous helicopter landing pads	11120
	- other surfaced helicopter landing pads	
	- Concrete LTA landing pads	
	- Bituminous LTA landing pads	11130
	- other surfaced LTA landing pads	
	- other Concrete landing or take-off pads	
	- other Bituminous landing or take-off pads	11[illegible]0
	- other landing or take-off pads	

[illegible]

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Miscellaneous procured items and equipment production facilities

Description

The pay of Civilian Labor. and the Cost of supplies and services used in the maintenance of facilities and plants for constructing and assembling miscellaneous equipment. including, Parachutes, Construction and materials handling equipment; railroad equipment; medical & dental instruments; mechanical & electrical equipment, photographic equipment, Refrigerators etc

Detail Account Number		Navy Inventory Code
-	Parachute Plant - Permanent -	
-	Parachute Plant - Temporary	vv810
-	Parachute production facilities other than Bldgs	
-	Construction & Materials Handling Equipment Plant - Permanent	
-	Construction & Materials Handling Equip. Plant Temporary.	vv820
-	other Constr, & Met. Handling Equip Prod. facilities	
-	Railroad Equipment Plant - Permanent	
-	Railroad Equipment Plant - Temporary	vv830
-	other Railroad Equip. Production facilities	
-	other equipment production plants - permanent	
-	other Equipment production plants - temporary	vv890
-	other Equipment production facilities	

Production Facilities and Plants in support of installation

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of facilities and plants for producing and processing items and material in support of the installation

Detail Account Number		Navy Inventory Code
	- Asphalt Production Plant Building - Permanent	
	- Asphalt Production Plant Building - Temporary	22910
	- Asphalt Production facility other than Bldgs	
	- Concrete Batching Plant Building - Permanent	
	- Concrete Batching Plant Building - Temporary	22920
	- Concrete Batching facilities other than Bldgs	
	- Rock Crushing Plant Building - Permanent	
	- Rock Crushing Plant Building - Temporary	22930
	- Rock Crushing facilities other than Bldgs.	
	- Sawmill Buildings - Permanent	
	- Sawmill Buildings - Temporary	22940
	- Sawmills facilities other than Bldgs	
	- other production and processing Bldgs - Permanent	
	- other production and processing Bldgs - Temporary	22990
	- other production and processing facilities -	

esearch, Development and Test Buildings.

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of buildings used directly in theoretical or applied research and in development and test operations. Exclude; (1) Research, development and test facilities that are not buildings (see account 390) and (2) Medical Research buildings (in accounts 530).

Detail Account Number	Navy Inventory Code
- Aircraft and Flight Equipment RD+test - Permanent	31010
- Aircraft and Flight Equipment RD+test - Temporary	
- Astronomy, Geophysics + Geography RD+test - Permanent	31014
- Astronomy Geophysics + Geography RD+test - Temporary	
- Chemical warfare equipment + Materials RD+test - Permanent	31018
- Chemical warfare equipment + Material RD+test - Temporary	
- Chemistry laboratory - Permanent	31020
- Chemistry laboratory - Temporary	
- Communications Equipment RD+test - Permanent	31024
- Communications Equipment RD+test - Temporary	
- Detection Equipment RD+test - Permanent	31028
- Detection Equipment RD+test - Temporary	

(cont'd)

- Electrical Equipment R.D + test - Permanent	31030
- Electrical Equipment R.D + test - Temporary	
- Electronics and Electronic Equip. R.D + test - Permanent	31034
- Electronics and Electronic Equip. R.D + test - Temporary	
- Ground Transportation Equip. R.D + test - Permanent	31038
- Ground Transportation Equip. R.D + test - Temporary	
- Guided Missile R.D + test - Permanent	31040
- Guided Missile R.D + test - Temporary	
- Non Metallic Materials R.D + test - Permanent	31044
- Non Metallic Materials R.D + test - Temporary	
- Metallurgy Laboratory - Permanent	31048
- Metallurgy Laboratory - Temporary	
- Navigational Equipment R.D + test - Permanent	31050
- Navigational Equipment R.D + test - Temporary	
- Nuclear physics and Nuclear Chemistry Laboratory - Permanent	31054
- Nuclear physics and Nuclear Chemistry Laboratory - Temporary	
- Physics Laboratory - Permanent	31058
- Physics Laboratory - Temporary	
- Nuclear Propulsion R.D + test - Permanent	31060
- Nuclear Propulsion R.D + test - Temporary	
- Propulsion Systems R.D + test - Permanent	31064
- Propulsion Systems R.D + test - Temporary	
- ordnance R.D + test - Permanent	31068
- ordnance R.D + test - Temporary	

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0 (Cont'd)

- Ships and Marine Equip. R.D+ test - Permanent	31070
- Ships and Marine Equip. R.D+ test - Temporary	
- Other R.D + test Buildings - Permanent	31090
- Other R.D+ test Buildings - Temporary	

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esearch, Development and test Facilities other than Buildings

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of structures and facilities used directly in theoretical or applied research and in development and test operations. Excludes Buildings used for Research, Development and test operations, (See account 310)

Detail Account Number		Navy Inventory Code
	- Aircraft and Flight Equip. RD + test facility	39010
	- Astronomy, Geophysics and Geography RD + test facility	39014
	- Chemical warfare equipment RD + test facility	39018
	- Communication Equip. RD + test facility	39022
	- Detection Equipment RD + test facility	39028
	- Electrical Equipment RD + test facility	39030
	- Electronics and Electronic Equipment RD + test facility	39034
	- Ground Transportation Equip. RD + test facility	39038
	- Guided Missile RD + test facility	39040
	- Non Metallic materials RD + test facility	39044
	- Navigational equipment RD + test facility	39050
	- Nuclear propulsion RD + test facility	390[illegible]

(Cont'd)

- Propulsion systems RD + test facility .	39064
- Ordnance RD + test facility	39068
- Ships and Marine Equip. RD + test facility	39070
- other RD + test facilities	39090

Depot, Terminal and Bulk Liquid Fuel Storage:

Description

The Pay of Civilian labor and the Cost of supplies and services used in the maintenance of tanks for depot, terminal or bulk type storage of liquid fuels. Exclude: (1) operating Fuel Storage tanks covered by accounts 124, and (2) Bulk fuel pipeline and pumping stations covered by accounts 125.

Detail Account Number	Navy Inventory Code
- Ship Fuel Storage Tank	41110
- Aviation Gasoline Storage Tank	41120
- Diesel oil Storage Tank	41130
- Motor Gasoline Storage Tank	41140
- Jet Engine Fuel Storage Tank	41150
- Liquefied Petroleum Fuel Gas Storage Tank	41160
- Liquid propellant Storage Tank	41170
- Lubricant Storage Tank	41180
- other liquid fuel storage tanks	41190

421

Depot and Arsenal Bulk Ammunition Storage.

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of igloos, magazines, storehouses and storage pads for storing depot and arsenal bulk ammunition. The maintenance Costs of these facilities include the maintenance of associated explosive barriers. Exclude: the maintenance of Igloos, magazines, storehouses and storage pads used for storing ammunition in support of station mission (See accounts 422).

Detail Account Number		Navy Inventory Code
	- Fuse and Detonator Magazine	42110
	- High explosive magazine	42120
	- Inert Storehouse	42130
	- Smokedrum Storehouse	42140
	- Smokeless powder and projectile Magazine	42150
	- Special weapons magazine	42160
	- Guided Missile Magazine	42170
	- other ammunition storage facility	42190

Note: The segregation here of Special Weapons and Guided Missiles sort of shoots holes in our concept that Guided Missiles are included in Special Weapons

tation and Ready Issue Ammunition Storage

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of igloos, magazines, storehouses and storage pads for storing station and ready issue ammunition. The maintenance cost of these facilities includes the cost of associated explosion barriers. *Exclude:* the maintenance of Igloos, magazines, storehouses and storage pads used for storing bulk ammunition (See accounts 421).

Detail Account Number	Navy Inventory Code
- High Explosive Magazine -	42210
- Fuse and Detonator Magazine -	42215
- Inert Storehouse	42220
- Smokedrum Storehouse	42225
- Small Arms and Pyrotechnics Magazine -	42230
- Ready Magazine.	42235
- Fixed Ammunition Magazine	42240
- Special Weapons Magazine.	42245
- Guided Missile Magazine	42250
- other ammunition storage facility	42290

Liquid Propellant – Bulk Storage and Distribution

Description

The [illegible] [illegible] [illegible] under the cost of supplies and [illegible] used in the maintenance of [illegible] for the storage, distribution, [illegible] and [illegible] of bulk liquid propellants. Includes bulk storage, distribution, pumping and dispensing (See [illegible] [illegible] [illegible] [illegible])

Detail Account Code	Navy Inventory Code
– Liquid Propellant Storage Tanks –	44310
– Liquid Propellant Pumping Station –	44320
– Liquid Propellant Distribution System –	44390
– Liquid Propellant dispensing system	

Comment: From the description of Basic Category Code 443, this Code includes the distribution system and the dispensing apparatus; [illegible] [illegible] Codes [illegible] do not apply to Bulk liquid propellants.

pal use In Direct Cold Storage Plants and Facilities

Description

The pay of Civilian Labor and the Cost of supplies and materials used in the maintenance of Cold storage plants and facilities including, Freeze and Chill Plants, cold and refrigerator warehouses and normal processing facilities [illegible] [illegible]. Include: Cold storage facilities used in connection with installation messes (See accounts 421)

Detail account Number	Navy Inventory Code
- ~~Cold Storage Plants + Warehouse Buildings - Permanent~~	
- Cold Storage Plants + Warehouse Buildings - Temporary	43180
- Cold Storage facilities other than Buildings	

Comment; All facilities dealing with Cold Storage are Covered by 43180. Navy Code 43190 is therefore of no value. No account established for 43190.

ntallation and Ready Issue Cold Storage Plants and Facilities

Description

The pay of Civilian labor and the cost of supplies and depreciation used in the maintenance of Cold storage plants and facilities including, Freeze and Chill plants, Cold and refrigerated warehouses and normal processing facilities Combined therewith.

Exclude: Depot and In-Transit Cold storage facilities (See accounts 431).

Detail Account Number		Navy Inventory Code
	- Cold Storage Plants + Warehouse Buildings - Permanent -	
	- Cold Storage Plants + Warehouse Buildings - Temporary -	43210
	- Cold Storage facilities other than Buildings -	

Comment: All facilities dealing with Cold storage are covered by 43210. Navy Code 43290 is therefore of no value. No account established for 43290.

pot, Arsenal and Bulk Covered Storage

Description.

The pay of Civilian labor and the cost of supplies and services used in the maintenance of covered storage facilities used for Depot, arsenal or bulk storage functions, including shed storage not completely enclosed by walls and including loading platforms related to such storage buildings. Exclude: (1) open storage areas covered by account 451, and (2) covered storage used for ready issue in support of station mission (See accounts 442).

Detail Account Number	Navy Inventory Code
- General Warehouse Buildings - Permanent	44110
- General Warehouse Buildings - Temporary	
- Dehumidified Warehouse Buildings - Permanent	44120
- Dehumidified Warehouse Buildings - Temporary	
- Flammable Storehouse Buildings - Permanent	44130
- Flammable Storehouse Buildings - Temporary	
- Underground Storage Buildings - Permanent	44140
- Underground Storage Buildings - Temporary	
- Other Storage Buildings - Permanent	44190
- Other Storage Buildings - Temporary	

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stallation and Ready Issue Covered Storage

Description

The pay of Civilian labor and the costs of supplies and services used in the maintenance of covered storage facilities used for installation & ready issue storage functions, including shed storage not completely enclosed by walls and including loading platforms related to such storage buildings. Exclude: (1) open storage areas covered by account 452 and (2) covered storage used for Depot, Arsenal or Bulk storage function (See accounts 441)

Detail Account Number		Navy Inventory Code
	- General Warehouse Buildings - Permanent -	44210
	- General Warehouse Buildings - Temporary -	
	- Dehumidified Warehouse Buildings - Permanent -	44220
	- Dehumidified Warehouse Buildings - Temporary -	
	- Flammable Storehouse Buildings - Permanent	44230
	- Flammable Storehouse Buildings - Temporary -	
	- Underground Storage Buildings - Permanent	44240
	- Underground Storage Buildings - Temporary	
	- Transit Shed Building - Permanent	4425
	- Transit shed Building - Temporary	

4r (Cont'd)

- Aviation Warehouse Buildings - Permanent	44r60
- Aviation Warehouse Buildings - Temporary	
- other storage Buildings - Permanent	44r90
- other storage Buildings - Temporary	

Depot, In-transit and Bulk Open Storage Areas

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of open areas used for depot, in-transit and bulk storage including, paved, prepared surface, stabilized, non-paved, non-prepared and non-stabilized areas. Exclude: Open storage areas used for storage of ready-issue items (See account 45).

Detail Account Number		Navy Inventory Code
	- open storage areas	45110

Comment: Navy Category Code 45190 is meaningless since 45110 covers all open storage areas for Bulk material. No account therefore established.

452

[illegible] and Ready Issue open storage areas

Description

The pay of Civilian Labor and the Cost of supplies and Services used in the maintenance of open areas used for installation and ready issue storage, including paved, prepared surface, stabilized, non-paved, non prepared and non stabilized areas. Excludes: open storage areas used for storage of Depot, In-transit or Bulk items (See account 451).

Detail Account Number		Navy Inventory Category Code
–	open storage areas	45r10

Comment: Navy Category Code 45r90 is meaningless since 45r10 covers all open storage areas for ready issue materials. No account therefore established

Hospital Buildings

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of hospital buildings. Hospital buildings refers to those facilities at medical Centers, at major hospital installations and at other installations where Complete in-patient care is provided. Exclude: (1) Officers', Nurses' and Corpsmen's housing (see accounts 710 720), (2) Infirmary buildings Covered by accounts 520 and (3) Recreational buildings Covered by accounts 740.

Detail Account Number		Navy Inventory Code
- Hospital Buildings - Permanent	-	51010
- Hospital Buildings - Temporary	-	

Comment: Code 510 is entitled Hospital Buildings. Since 51010 Covers the same thing, Navy Code 51090 is meaningless. No accounts established therefore for 51090

Infirmary Buildings

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of Infirmary buildings. Infirmary buildings refer to those facilities providing limited in-patient Care as distinguished from hospitals in which Complete in-patient Care is provided

Detail Account Number		Navy Inventory Code
-	Infirmary Buildings - Permanent	54010
-	Infirmary Buildings - Temporary	

Comment: The distinction between Hospitals and Infirmaries as defined in 11011.47 is not very strong at best. It seems rather poor judgement to Confuse the issue further by using the term "station Hospital" under infirmaries. Code 54090 is meaningless since 54010 Covers the total. No accounts therefore established for it

ratories and Clinics

Description

The pay of civilian labor and the cost of supplies and services used in the maintenance of buildings used for medical laboratory and research work, for out patient medical clinical care and diagnosis, for veterinary services, for morgue activities etc. Exclude: Hospitals, Infirmaries, Dental Clinics and Dispensaries (See accounts ________).

Detail Account Number		Navy Inventory Code
	- Medical Clinical Buildings - Permanent	53010
	- Medical Clinical Buildings - Temporary	
	- Medical Laboratory & Research Bldgs. - Permanent	53020
	- Medical Laboratory & Research Bldgs - Temporary	
	- Morgue Buildings - Permanent	53030
	- Morgue Buildings - Temporary	
	- Other Medical Buildings - Permanent	53040
	- Other Medical Buildings - Temporary	

Comment: The title "Laboratories and Clinics" is not comprehensive enough to cover the detail itemized therein.

Dental Clinics

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of buildings used as dental Clinics.

Detail Account Number		Navy Inventory Code
	- Dental Clinic Buildings - Permanent	54010
	- Dental Clinic Buildings - Temporary	

Comment: Code 54010 "Dental Clinic" Contains all items in this three digit Category Code. 54090 therefore has no meaning, No account established for 54090 therefore.

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Dispensaries

Description

The pay of Civilian Labor and the Cost of supplies and services used in the maintenance of out-patient dispensary buildings.

Detail Account Number		Navy Inventory Code
	- Dispensary Buildings - Permanent	55010
	- Dispensary Buildings - Temporary	

Comment: Navy Category Code 55010 covers all items in this three digit Category Code. 55020 has no meaning therefore and no accounts established for it.

ministrative Buildings

Description

The cost of civilian labor and the cost of supplies and services used in the maintenance of buildings housing administrative functions such as offices, professional and technical activities together with their business machines, records, files and supplies incidental thereto. *Exclude*: Bulk storage of administrative records (see accounts 441)

Detail Account Number	Navy Inventory Code
- Administrative Buildings - Permanent	610[illegible]0
- Administrative Buildings - Temporary	

Comment: Navy Code 61090 is meaningless since 6101[illegible] covers all administrative buildings. No accounts therefore established for 61090

nderground Administrative Structures

Description

The pay of Civilian labor and the Cost of supplies and services used in the maintenance of underground structures used for administrative purposes.

Detail Account Number		Navy Inventory Code
-	Underground Administrative Structures	6Y010

Comment: Code 6Y090 is meaningless. All Underground Administrative Structures are Covered by 6Y010. No account established for 6Y090 therefore.

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690

ther Administrative Structures

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of above ground administrative structures. Exclude: (1) Gatehouses (see account 730), (2) Guard towers, gates and fencing (see accounts 872) and (3) Administrative buildings (see accounts 61010).

Detail Account Number		Navy Inventory Code
-	Flagpoles	69010
-	Monuments and Memorials	69020
-	other administrative structures	69090

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711

amily Housing Dwellings

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of buildings used as family quarters, including attached private garages. Exclude: (1) Trailers used for family housing (see accounts 712), (2) Troop housing facilities (see accounts 710), and (3) Detached garages for family housing (see accounts 714)

Detail Account Number		Navy Inventory Code.
	- Public Quarters - Civilian - Permanent -	71110
	- Public Quarters - Civilian - Temporary -	
	- Public Quarters - Enlisted - Permanent	71111
	- Public Quarters - Enlisted - Temporary	
	- Public Quarters - WO thru LT. - Permanent	71112
	- Public Quarters - WO thru LT - Temporary	
	- Public Quarters - LCDR + CMDR - Permanent	71113
	- Public Quarters - LCDR + CMDR - Temporary	
	- Public Quarters - Captains - Permanent	71114
	- Public Quarters - Captains - Temporary	
	- Public Quarters - Flag Officers - Permanent	71115
	- Public Quarters - Flag Officers - Temporary	

Detail Account Number	Navy Account [illegible]
- Public Quarters - Capehart - Civilian - Permanent	71120
- Public Quarters - Capehart - Civilian - Temporary	
- Public Quarters - Capehart - Enlisted - Permanent	71121
- Public Quarters - Capehart - Enlisted - Temporary	
- Public Quarters - Capehart - WO thru LT. - Permanent	71122
- Public Quarters - Capehart WO thru LT. - Temporary	
- Public Quarters Capehart - Lcdr + Cmdr - Permanent	71123
- Public Quarters Capehart Lcdr + Cmdr. - Temporary	
- Public Quarters Capehart Captains - Permanent	71124
- Public Quarters - Capehart - Captains - Temporary	
- Public Quarters - Capehart - Flag Officers - Permanent	71125
- Public Quarters Capehart - Flag Officers - Temporary	
- Public Quarters - Wherry - Civilian - Permanent	71130
- Public Quarters - Wherry - Civilian - Temporary	
- Public Quarters - Wherry - Enlisted - Permanent	71131
- Public Quarters - Wherry - Enlisted - Temporary	
- Public Quarters - Wherry - WO thru LT. - Permanent	71132
- Public Quarters - Wherry - WO thru LT. - Temporary	
- Public Quarters - Wherry - Lcdr + Cmdr - Permanent	71133
- Public Quarters Wherry - Lcdr + Cmdr - Temporary	
- Public Quarters - Wherry Captains - Permanent	71134
- Public Quarters - Wherry - Captains - Temporary	

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[illegible] (Cont'd)

Detail Account Number	Navy Inventory Code
- Public Quarters - Wherry - Flag Officers -	71135
- Public Quarters - Wherry - Flag Officers -	
- Rental Housing - Defense - Permanent -	71140
- Rental Housing - Defense - Temporary	
- Rental Housing - Foreign - Permanent -	71141
- Rental Housing - Foreign - Temporary	
- Rental Housing - Wherry - Navy operated - Permanent -	71142
- Rental Housing - Wherry - Navy Operated - Temporary	
Rental Housing - Title III - Permanent	71144
- Rental Housing - Title II - Temporary	
- Rental Housing - other - Permanent	[illegible]
- Rental Housing - other - Temporary	

Comment: No account required for code 71143 since the Navy should have no maintenance costs on Sponsor operated Wherry rental Housing. No account therefore established.

712

Family Housing Trailers

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of Trailers used for family housing. Exclude: Trailer Sites.

Detail Account Number		Navy Inventory Code.
	- Title III Trailers	71210
	- other Trailers	71290

Family Housing Trailer Sites

Description.

The pay of civilian labor and the cost of supplies and services used in the maintenance of trailer sites used for family housing, including pads and structures of other than such as shower and sanitary facilities. Exclude: Exterior electricity, heat, sewage and waste and water utility systems (see accounts [illegible])

Detail Account Number	Item Inventory Code
- Trailer sites for non-owned trailers -	[illegible]
- Trailer sites for family owned trailers	[illegible]

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Family Housing Detached Garages

Description

The pay of Civilian labor and the cost of supplies and services used in the maintenance of detached garages used by occupants of family housing.

Detail Account Number	Navy Manage- Code
Family Housing Detached Garages	

Comment: Code 714.0 includes all items of the 3 digit DOD Category Code. 714.0 is category [illegible] and no account established for it

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